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RED SEA AND GULF OF ADEN PILOT

COMPRISING
THE SUEZ CANAL, THE GULFS OF SUEZ AND
AQABA, THE RED SEA, THE GULF OF ADEN,
THE SOUTH-EAST COAST OF ARABIA FROM RAS
BAGHASEWA TO RAS AL HADD, THE COAST OF
AFRICA FROM CAPO GUARDAFUI TO RAS
HAFUN, SOCOTRA AND ITS ADJACENT ISLANDS

NINTH EDITION
1944

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the port and of shooting positions in which they shall anchor. If Government vessels, or vessels belonging to the local port authority, are found patrolling in the offing, merchant vessels are advised to communicate with such vessels with a view to obtaining information as to the course on which they should approach the port. Such communication will not be necessary in cases where the pilot on board has already received this information from the local authorities.

(6) As the institution of the Examination Service will probably be unknown to vessels desiring to enter the port, especial care should be taken in approaching the ports, by day or night, to keep a sharp lookout for any vessel carrying the flags or lights mentioned in paragraph (7), and to be ready to "bring to" at once when hailed by her or warned by the firing of a gun or sound rocket.

In approaching by night any port in the British Empire, serious delay and risk will be avoided if four efficient all round lanterns, two *red* and two *white*, are kept available for use.

(7) By day the distinguishing flag of the Examination vessel will be a special flag (white and red horizontal surrounded by a blue border).

Also, three *red* balls vertically disposed if entrance is prohibited.

Usually the Examination vessel will fly the blue ensign, but in certain circumstances she may fly the white ensign.

By night the steamer will carry: (a) Three *red* lights vertically disposed if entrance is prohibited; (b) three *white* lights vertically disposed if entrance is permitted.

The above lights will be carried in addition to the ordinary navigation lights, and will show an unbroken light around the horizon.

(8) Merchant vessels approaching a British port, at which the Examination Service is in force, must hoist their signal letters on arriving within visual signalling distance of the port and are not to wait for the signal "What is the name of your vessel?" to be made from the Examination vessel.

(9) Masters are warned that before entering any port when the Examination Service is in force, they must in their own interests strictly obey all instructions given to them.

Whilst at anchor in the port, Masters are warned that it is forbidden, except for the purpose of a *showing anchor*, to do any of the following things, without permission from the Examination Officer:—(a) To lower any boat; (b) to communicate with the shore or other ships; (c) to move the ship; (d) to work cables; (e) to allow any person or thing to leave the ship.

(10) In case of fog, Masters of vessels are enjoined to use the utmost care, and the port should be approached with caution.

(11) When the Examination Service is in force, merchant vessels when approaching ports are especially cautioned against making use of private signals of any description, either by day or night; the use of them will render a vessel liable to be fired on.

(12) The pilots attached to the ports will be acquainted with the regulations to be followed.

BRITISH PORTS.
Notice to Mariners No. 1
Subjects mentioned below.

PORTS.

taken into consideration certain ports of the Empire, the British Isles, or any lookout should be kept for the vessels mentioned in the above list, and other signals made at night, and the port or locality should be shown by the vessels.

the port with the greatest care by the Examination

Highlights are occasionally avoided directing moveable lights at mariners are warned for the signals indicated to be working.

SERVICE.

take special measures to be taken at home or abroad.

Flags or lights mentioned in the above list which desire to enter

NOTATIONS OF SUPPLEMENTS AND ANNUAL
SUMMARIES OF NOTICES TO MARINERS
RELATING TO THIS BOOK.

To be filled in by Navigating Officer.

(In Chart Depôts the first two columns are alone to be filled up.)

Title.	Date of Publication and Number.	Whether pasted in or noted in Margins of Book, and Date of each Correction.

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Attention is called to British Admiralty Notices to Mariners
Nos. 1, 4 and 7, which are published annually.

NOTICE.

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A Supplement to this volume will generally be published annually until the latter is again taken up for revision.

After the publication of Supplement No. 1, each succeeding supplement cancels the former.

Between the time of the volume being taken up for revision and the publication of the new edition no supplement will be issued, but early in each year a Summary of the Admiralty Notices to Mariners affecting the volume, which have been published during the preceding year, will be issued as a separate publication.

The publication of all Supplements and Summaries of Notices to Mariners is announced in Admiralty Notices to Mariners.

The latest Supplement and any Annual Summary of Notices to Mariners that has been published affecting this volume will be obtainable gratuitously by purchasers of this volume from the Agents for the sale of Admiralty charts and other Hydrographic publications, on application either personally or by letter; in the latter case the cost of postage must be enclosed. For a list of these Agents *see* Admiralty Notice to Mariners No. 2, published annually.

RED SEA

AND

GULF OF ADEN PILOT

COMPRISING

THE SUEZ CANAL, THE GULFS OF SUEZ AND 'AQABA, THE RED SEA, THE GULF OF ADEN, THE SOUTH-EAST COAST OF ARABIA FROM RAS BAGHASHWA TO RAS AL HADD, THE COAST OF AFRICA FROM CAPO GUARDAFUI TO RAS HAFUN, SOCOTRA AND ITS ADJACENT ISLANDS

NINTH EDITION, 1944

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1944

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To face page ii.]

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CAUTION.

**IN THIS WORK THE BEARINGS ARE ALL TRUE, AND
WHEN GIVEN IN DEGREES ARE RECKONED
CLOCKWISE, FROM 000° (NORTH) TO 359°.**

THE BEARINGS OF LIGHTS ARE GIVEN FROM SEAWARD.

**THE LATITUDES AND LONGITUDES GIVEN IN THE
TEXT ARE APPROXIMATE.**

**THE DISTANCES ARE EXPRESSED IN NAUTICAL MILES
OF 60 TO A DEGREE OF LATITUDE.**

**A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO
THE TENTH PART OF A NAUTICAL MILE.**

**THE DEPTHS ARE GIVEN BELOW CHART DATUM LEVEL
WHERE NOT OTHERWISE STATED.**

**HEIGHTS ON THE LAND ARE GIVEN ABOVE MEAN
LEVEL OF HIGH WATER SPRING TIDES.**

**FIGURES IN BRACKETS GIVEN AFTER THOSE
DENOTING FEET, FATHOMS AND YARDS ARE
THEIR EQUIVALENTS IN METRES.**

**TIME IS EXPRESSED IN THE FOUR-FIGURE NOTATION
COMMENCING AT MIDNIGHT.**

**THE TERM "STEAM VESSEL" USED HEREIN IN-
CLUDES ANY VESSEL PROPELLED BY MACHINERY.**

**A NAME IN BRACKETS, IMMEDIATELY FOLLOWING
ANOTHER NAME, IS THE OBSOLETE NAME WHICH IS
STILL SHOWN ON THE ADMIRALTY CHARTS. AS A
GENERAL RULE, THE BRACKETED NAME IS ONLY
INSERTED IN THE DESCRIPTION OF THE PLACE OR
OBJECT PREVIOUSLY BEARING THAT NAME.**

**WHEN SHADING IS USED TO INDICATE COLOURS OF
FLAGS, TIDAL LIGHT SIGNALS, OR
BEACONS, IT IS AS FOLLOWS:**



Yellow.



Red.



Blue



Green.



Black.

ADVERTISEMENT TO THE EIGHTH EDITION

The Red Sea and Gulf of Aden Pilot comprises directions for the navigation of the Suez canal, the Gulf of Suez, and the central track for steam vessels through the Red sea, Straits of Bāb-al-Mandab, and Gulf of Aden ; also, descriptions of the Gulf of 'Aqaba, the shores of the Red sea, the inner channels, the Gulf of Aden, and the south-eastern coast of Arabia to Ras al Hadd, the coast of Africa from Ras Si Ane to Capo Guardafui, including Golfe de Tadjura, thence to Ras Hafun, Abd-al-Kuri, the Brothers, and Socotra.

This, the ninth edition, has been prepared by Commander F. C. Hanning-Lee, R.N., and contains the latest information.

The Meteorological information has been revised by the Meteorological section of the Air Ministry. Temperature is expressed in degrees Fahrenheit, rainfall in inches, and speed in knots and distance in nautical miles unless expressly stated otherwise. Information received from meteorological services which do not use these units has been converted into the units mentioned above by the Meteorological Office.

Mariners and others are invited, in the interests of navigation, to forward to the Hydrographer of the Navy, Admiralty, London, S.W.1, any information that may come under their notice which may be useful for the correction of the charts and hydrographic publications issued by the British Admiralty ; *early* advice as to newly-discovered dangers, the establishment of, or changes in, any aids to navigation, is especially requested.

Copies of a form (H102) on which to render information can be obtained gratis from the Hydrographer of the Navy, Admiralty, London, S.W.1 ; or from any of the Agents in Great Britain and abroad, a list of whom is published, annually, in Admiralty Notice to Mariners No. 2.

By the publication of this volume, the eighth edition of the Red Sea and Gulf of Aden Pilot, and its Supplement No. 10, 1943, are cancelled, and all information affecting that work contained in Notices to Mariners up to and including No. 2645 of 1944 has been embodied in this volume ; for Temporary and Preliminary Notices to Mariners affecting this edition, the list of Temporary and Preliminary Notices to Mariners in force, published monthly in the weekly edition of the Admiralty Notices to Mariners, should be consulted.

J. A. EDGEELL,
Vice-Admiral and
Hydrographer of the Navy.

Hydrographic Department,
Admiralty, London,
25th November, 1944.

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GLOSSARY.

ENGLISH	EGYPTIAN ARABIC	ANGLO-EGYPTIAN SUDANESE ARABIC	HEJAZ ARABIC WESTERN COAST OF ARABIA	YEMENI ARABIC SOUTHERN COAST OF ARABIA	BRITISH SOMALILAND ARABIC	SOMALI
Abseam . . .	Hid.	See Port, Starboard.	Ala Janb.	Hirab.	Sawa Sawa.	—
Ahead . . .	Amim.	Gid-dim, Gud-dim.	Guddam.	Guddam.	Kuddam.	—
Anchor . . .	Mubtahi.	Baura, Burtid.	Bura, Burood.	Barrodi.	Barrodi.	—
Anchorage . .	Marsa.	Marsa.	Marsa, Marsa.	—	Marsa.	—
Arm of the sea .	Wara.	Wara.	'Ala Wara'.	Qafa.	Gal an jaded.	—
Astern . . .	—	—	—	—	Wazyl.	—
Bank . . .	Dahl.	Kidim, Gidin.	Barr.	Udd.	Atta.	—
Bar . . .	Sadd, Hagiz.	—	Reema.	Sadd.	Atta Motawel.	—
Basin . . .	Hida.	—	Hond.	Handh.	Marsa Taghit.	—
Bay . . .	Ghubbet.	Gilawa.	Ghubbat.	Bandar, Ghubbat.	Ghubbat.	—
Beach . . .	Sahil, Shatt.	Ghubbet.	Shatt.	Sahel.	Sahil.	—
Beacon . . .	'Atma.	Ibhira.	'Alima.	'Alima.	Kubbeh.	—
Ball-buoy . . .	'Awamot-garas.	—	'Alima bi shaki Jaras.	Boja abu jaras.	Boja abu nakus.	—
Black . . .	Aswad, Sfda.	Aswad, Sfda.	Aswad.	Aswad.	Aswad.	—
Blue . . .	Azraq.	Azraq.	Azraq.	Azraq.	Azraq.	—
Boat . . .	Feluka.	Feluka, Zerga.	Boat, Garib.	Boat.	Zabab.	—
Bottom . . .	Qa'.	Garir el bahar.	Garir el bahar.	Qa' el bahar.	Katsh el Behr.	—
Breakers . . .	Kasr bahar.	Kasr-dara.	Amwaj kuhra.	Amwaj.	Amwaj.	—
Buoy . . .	'Awfina.	Shamsandira.	Alima sabaya.	Boja.	Boja.	—
Canoe . . .	Zirag, Hbri.	Hbri.	Houri.	Huri.	Hori.	—
Cape . . .	Ras.	Ras.	Ras.	Ras.	Ras.	—
Cattle . . .	Qal'a.	Gal'a, Tabla.	Galaa.	Qala 'a.	Husum.	—
Channel . . .	Migra.	Fosma, Mijra.	Majra.	Majra.	Khor.	—
Church . . .	Kanisa.	Kanisa.	Kinessa.	Kanish.	Kanish.	—
Circular . . .	Mudawwar.	Mudawwar.	Mudawwara.	Mudawwar.	Hallat.	—
Cleft . . .	Garf.	Kifab, Jili.	Jarf.	Jarf.	Jebel el Hojer.	—
Cloud . . .	Sahiba.	Ghamam, Sahab.	Sahab.	Sahab.	Sahab.	—
Coast . . .	—	—	—	—	—	—
Compass . . .	Bitula.	Dira, Bitula.	Bitula.	Dira.	Hob (di).	—
Coral . . .	Murjan.	Murjan.	Murjan.	Mirjan.	Dira Naliya.	—
Coral (white) .	—	—	—	—	Sha'ab or Sha'b (di).	—
Coral (red) . .	—	—	—	—	Murjan (di).	—
Creek . . .	Shern.	Khor.	Khor, Sharn.	Khor.	Khor.	—
Current . . .	Tayyar.	Tiyar, Madd.	Khor, Tayyar.	Madd.	Mayeh.	—
Danger . . .	Khatar.	Khatar.	Khatar.	Khatar.	Khatar.	—
Deep . . .	'Amiq.	Ghazir, Gharig.	Amseq.	Ghazir.	Ghazab, Amik.	—
Dome . . .	Qubba.	Gubba.	Qubba.	Qubba.	Kubbah.	—
Dune . . .	Kom rami, Kathib.	Gizan.	Kabb.	Kaud.	*Kidif nes, Kom en nes.	—
East . . .	Sharq.	Sharq.	Sharq.	Sharq.	Sharqi.	—

GLOSSARY—continued.

ENGLISH	EGYPTIAN ARABIC	ANGLO-EGYPTIAN SUDANESE ARABIC	REJAZ ARABIC WESTERN COAST OF ARABIA	YEMENI ARABIC SOUTHERN COAST OF ARABIA	BRITISH SOMALILAND ARABIC	SOMALI
East-north-east	Sharq-shimal-sharq.	Shang esh shamāl esh sharg.	Sharq-shamāl-sharq.	Sharq-qibli-sharq.	Sharq-shimal-sharq.	—
East-south-east	Sharq-shamāl-sharq.	Shang el jnūb esh sharg.	Sharq-shamāl-sharq.	Sharq-shamāl-sharq.	Sharq-shamāl-sharq.	—
Ebb	Gazr.	—	Sharq-shamāl-sharq.	Sharq-shamāl-sharq.	Sharq-shamāl-sharq.	—
Entrance	Madkhāl.	Mad-khāl. Fosma.	Madkhāl.	Madkhāl.	Madkhāl.	Ilīn (dl).
Fast	Sari'.	Sari'.	Sari'.	Sari'.	Sari'.	—
Flood	Madb.	—	Tofan.	Madb.	Madb.	—
Fog	Dabāb.	Shabūra.	Shabūra, Dabāb.	Dabāb.	Ghobar, Dabāb.	—
Fog signal	Asbaret-dabāb.	—	Sufara ad-dabāb.	Madkhāl.	Asbaret el Ghobar, Isharet	—
Forest	Ghāba.	Ghāba.	Hirah.	Khabt.	Jedrah.	Dud (dl), Sharer (dl).
Fort	Him.	Gal'a, Rābia.	Tabyā.	Qana.	Khabt.	—
Fresh water	Moya 'azb.	Moya bilwa.	Moya Hilwa.	Rā hāl.	Mā hāl, Mowyah hāl.	—
Gravel	Hasa.	Sagal.	Hasa.	Hasa.	Nes besah, Hesah besah.	—
Great	Kebir.	Kebir.	Kabir.	Kabir.	Kebir.	—
Green	Alkhādar.	Alkh-dar, Khudra.	Alkhādar.	Alkhādar.	Alkhādar.	—
Gulf	Khatig.	Bughāz.	Khalaj.	Khalaj.	Khōr, Ghabbat, Khelij.	—
Half tide	Wust el madd.	—	Madd Galeel.	Nusf madd.	Behr Neksan, Mā Mutawasid	—
Harbour	Mina.	Mina, Marsa.	Mariaa.	Randar.	Marsa.	Deked (dl).
Head, Headland	Ras.	Ras.	Lūsin.	Ras.	Ras.	—
High water	Irtifa 'el madd.	Moya kebir.	Bahr ali.	Madd kamel.	Behr senah.	Bur yar, kur (dl), kurun (dl)
Hill	Tāl.	Jebel.	Tell.	Tell.	Jebel, Tāl.	Gumbur (dl).
Hillock	Rābia.	Jebel saghir.	Tell saghir.	Tell saghir.	Jebel saghir, Tāl saghir.	—
House	Maskan.	Beyt.	Bait.	Bait.	Bait, Dar.	—
Inlet	Sherm.	Jezirat.	Khōr.	Madkhāl.	Medkhal, Khōr.	—
Island	Gedrat, Gedret	Jezirat saghir.	Jezirat, Jedrat.	Jezirat.	Jezirah.	Gashirad (dl).
Islet	—	Jezirat saghir.	Jezirat saghir.	Jezirat saghir.	Jezirah saghir.	—
Jetty	Isdila.	Sigāla.	Rusef.	Dakta.	Dakta saghir.	—
Lake	Babdra.	—	Bubera.	Bubera.	Bejirah.	Biyogal, biyo galen.
Landing place	Manzal.	—	Isdila.	Manal nurul.	Manan en Nazel.	—
Light	Nūr.	Sigāla, Nūr, Daū.	Noor.	Nūr.	Nūr.	—
Light-buoy	Awāma rat Nūr.	Fānis Nūr, Daū.	Alima noor.	Boja abu nur.	Boja abu nur.	—
Lighthouse	Manara, Fanar.	Fanar.	Fanar.	Minara.	Fenar, Menarāh.	—
Low water	Inkhisaf 'el Madd.	Moya 'aria.	Bahr Wa'ti.	'Ara al bahr.	Nulisan el Behr.	—
Mangrove	Shōra.	—	—	—	Shureh.	'Rubad (dl).
Marsh	Mursh.	—	—	—	Bethet, Mustenka, Kob.	—
Mist	Shabūra.	Shabūra.	Mustanqa'.	Subakha.	Debab, Shab.	—

GLOSSARY—continued.

ENGLISH	EGYPTIAN ARABIC	ANGLO-EGYPTIAN SUDANESE ARABIC	HEJAZ ARABIC WESTERN COAST OF ARABIA	YEMENI ARABIC SOUTHERN COAST OF ARABIA	BRITISH SOMALILAND ARABIC	SOMALI
Mole	Rasfēl, Mīna.	Sigāla.	Hagiz.	Hājiiz.	Sedd.	—
Mosque	Gāmi, Masgid.	Jāma, Masgid.	Masgid.	Mesjid.	Mesjid.	Masgid or masjid (id).
Mound, embankment	Gebel.	Jebel.	Jabal.	Jabal.	Jebel.	Dud (id).
Mountain range	—	—	—	—	—	Bur (id).
Mountain range	—	—	—	—	—	Har (id).
Mouth (of river)	Masab, Wadi.	Khachum.	Wadi, Wadi.	Wadi.	Wadi.	—
Mud	Tin.	Tin.	Wahl.	Wadi.	Tin, Turab.	—
Mudbank	Dahl Tin.	Khilba.	Barr.	*Sadd min at tin.	*Bukah et tin.	—
Narrow	Da' iq.	Dā-ig.	—	Dharyeg.	Diyik.	—
North	Shamāl.	Shimāl.	Shamāl.	Qibil.	Shimal.	—
North-east	Shamāl-sharq.	*Shimāl'esh shargi.	Shamāl-sharq.	Qibil-sharq.	Shimal-sharq.	—
North-north-east	Shamāl-shamāl-sharq.	*Shimāl'esh shimāl'esh shargi.	Shamāl-shamāl-sharq.	Qibil-qibil-sharq.	Shimal-shimal-sharq.	—
North-north-west	Shamāl-shamāl-gharb.	*Shimāl'esh shimāl'esh garbi.	Shamāl-shamāl-gharb.	Qibil-qibil-gharb.	Shimal-shimal-gharb.	—
North-west	Shamāl-gharb.	Shimāl'el garbi.	Shamāl-gharb.	Qibil-gharb.	Shimal-gharb.	—
Passage	Mamarr.	Fosma.	Mamarr.	Mamarr.	Medkbel, Dekhul.	—
Peak	Qimma.	Ras, Ras el jebel.	Ras.	Ras.	Kam, Jebel Kayem.	'Aro ('aradi).
Pier	Rasif.	Sigāla.	Isdila, Raseef al Mīna.	Dakta.	*Dekka hak en nazul.	—
Pilot	Marshid.	Rab-bān.	Rubbān.	Rubbān.	Rubbān.	—
Point	Nugra.	Ras.	Tarat.	Tarat.	Kam, Sawiyah.	—
Port (harbour)	Thaghr.	Mīna, Marsa.	Mīna.	Bandar.	Mersa.	—
Port (side of vessel)	Gamb Yasar, Sagāla.	Sigāla, Yisār.	Yasar al Markib.	Alsar.	Yesar el Merkeb.	—
Quay	Rasif.	Rasif.	Raseef, Iskala.	Dakta.	Dekkeh el Amwal.	—
Rain	Matar.	Matar.	Mattar, Shita'.	Matar.	Meter.	—
Red	Amrar.	At-rar, Humra.	Amrar.	Amrar.	Amrar.	—
Reef	Sha'ab.	Sha'ab.	Sha'ab.	Sha'ab.	Sha'ab.	—
River	Nahr.	Nahr.	Nahr.	Nahr.	Nahr.	—
Roadstead	Mīna kharga.	Mīna.	Mersa.	Mersa.	Marsa keshef.	—
Rock (above water)	Sakhra.	Hajar bat-yin.	Hajar.	Sakhra fog al ma.	Dawamir kharej el Behr.	—
Rock (sunken)	Wa't.	Hajar mugatta.	Hajr.	Sakhra taht al ma.	Dawamir dakhil el Behr.	Katah.
Sailing vessel	Sa'fīna shara' 'iya.	Sambūk.	Markib shira' a.	Markab shera.	Merkeb abu shirah.	—
Salt water	Moya malha.	Moya malha.	Ma' ma' lib.	Ma' malah.	Mā el Behr, Mowyah el Behr.	—
Sand	Raml.	Raml.	Raml.	Neis.	Nes.	—
Sandbank	Dunl raml.	Kidān, Gidān.	Barr ramleh.	Udd.	*Kittif en nes.	—
Sandhill	Tall raml.	Gez ramla.	Tall ramleh.	Kaud neis.	*Jebel en nes.	—
Sand storm	Rubbib.	Ghubra, Khalifa.	Aasifa.	Ghauba.	*Tufan en nes.	—
Sea	Behr.	Behr.	Behr.	Behr.	Behr.	—
Shallow	Satrah.	Ari, Molya.	Qaleel al ghur.	'Ari.	Sedef.	—
Shells	Mashr.	Sadaf.	Asdaf.	Hasa.	Ket-ket.	—
Shingle	Zalat.	Baskālin, Nataf.	Zalat.	—	—	—

GLOSSARY—continued.

ENGLISH	EGYPTIAN ARABIC	ANGLO-EGYPTIAN SUDANESE ARABIC	HEJAZ ARABIC WESTERN COAST OF ARABIA	YEMENI ARABIC SOUTHERN COAST OF ARABIA	BRITISH SOMALILAND ARABIC	SOMALI
Shoal	Kasar.	*Ad, Moiya.	Ari.	Makan ara.	Awari.	—
Shore	—	Saili.	Bari.	Daka-dala.	Sabel.	—
Slow	Badi'.	Badi.	Bati.	Saghir.	Amehi deladel.	—
Small	Saghir.	Saghir.	Saghir.	Janoub.	Saghir.	—
South	Ganib.	Janub.	Janoub.	Bahri-sharq.	Janub-sharq.	—
South-east	Ganib-sharq.	*Janub esh shargi.	Janoub-sharq.	Bahri-bahri-sharq.	Janub-janub-sharq.	—
South-south-east	Ganib-ganib-sharq.	Janub el janub esh shargi.	Janoub-janoub-sharq.	Bahri-bahri-guarbi.	Janub-janub-guarbi.	—
South-south-west	Ganib-ganib-guarbi.	Janub el janub el guarbi.	Janoub-guarbi.	Bahri-guarbi.	Janub-guarbi.	—
South-west	Ganib-guarbi.	Janub el guarbi.	Janoub-guarbi.	Sura.	Sari.	—
Speed	Sur'a.	Sur'a.	Sur'a.	Minara.	Burj.	—
Spire	—	—	Burj, Minara.	Minara.	Min.	—
Springs (of water)	Naba'.	—	Nab' Abu.	Maddi qawi.	Kudu.	—
Springs tide	Maddi Waf.	—	Maddi kabir.	Habilb.	Zoba 'ah ghafish, Derbesh ghafish.	—
Squall	Habba.	—	Noww.	Yamin.	Yemin el Metkeb.	—
Starboard (side)	Gamb Yamin, Sangaq.	Sanjak, Yamin.	Yameen al Markib.	Bakura.	Babur.	—
Steam vessel	Safina bathuriya.	Babur.	Baboor.	Hajer.	Hejer.	—
Stone	Hajar.	Hajar.	Hajer.	Taufan.	Tufan.	—
Storm	*Asifa.	Makhila.	Zomba'a.	Bughaz.	Bab.	—
Strait	Bughaz.	Bughaz.	Bughaz.	Saqia.	Ndar saghir.	—
Stream	Gadwal.	Tiyar, Madd.	Majra.	Ras.	Foz el Jebel, Ras el Jebel.	—
Summit	Zurwa.	Ras, Ras el Jebel.	Qumma.	Sabakha.	Wehel, Mustanka.	—
Swamp	Mustanqa.	—	Mustanga'.	Madd.	El Medd.	—
Tide	Madd.	—	Madd.	Husen.	Burj.	—
Tower	Burg.	Gal'a, Tabla.	Burj.	Madina.	Medinah, Beled.	—
Town	Medina.	Balad.	Blad.	Ashgar.	Sejrah.	—
Tree	Shajar.	Shajar.	Shajjar.	Qariya.	Keryah.	—
Village	Qarya.	Daym, Hilla.	Qariya.	Qariya.	Moj, Manj.	—
Wave	Moga.	Moj, Manj.	Manja.	Manja.	Beer.	—
Well	Bir.	Bir.	Bir.	Bir.	Meghirb, Gharb.	—
West	Gharb.	Gharb.	Gharb.	Gharb.	Gharb-shimal-gharbi.	—
West-north-west	Gharb-ashimal-gharbi.	Gharb esh ashimal el gharbi.	Gharbi-ashimal-gharbi.	Gharbi-qibl-gharbi.	Gharb-janub-gharbi.	—
West-south-west	Gharb-ganub-gharbi.	Gharb el janub el gharbi.	Gharbi-janoub-gharbi.	Gharbi-bahri-gharbi.	Dekka hak el mal, Resfi.	—
Wharf	Rasif.	Sigala, Rasif.	Rasaf.	Dakka.	*Boya es alti.	Dekad (kt).
Whistle-buoy	'Avama zat soffara.	Shamandura bi soffira.	Suffara Sabayya.	Boja musaffira.	Abayad.	—
White	Abayad.	Abayad, Beida.	Abayad.	Abiadh.	Reeh.	—
Wind	Rih.	Hawa.	Reeh.	Rih.	Ghaboh.	—
Wood (trees)	Ghaba.	Ghaba.	Ghaba.	Ashgar.	Asfar.	—
Yellow	Asfar.	—	Asfar.	Asfar.	Asfar.	—

* NOTE.—In Arabic the definite article "Al" or "El" assimilates before D, Dh, N, R, S, Sh, T, Th and Z; becoming "Ad," "Edh," "Ath," "Ez," etc.

SYSTEM OF ORTHOGRAPHY.

The following rules for the spelling of geographical names (termed the R.G.S. II system) have been adopted for British official use, and the names in Admiralty Hydrographic publications will be rendered in accordance with these rules as opportunity occurs.

In new editions of the various volumes of sailing directions names are, generally speaking, given in accordance with these rules, but where the name on the chart shows an older rendering of a name, such chart name is given in brackets after the new rendering and will also be given in the Index.

The rules for spelling in the R.G.S. II system are as follows:—

- (1) The spelling of every place-name in an independent country or self-governing dominion using the Roman alphabet (including "Roman" alphabets containing extra or modified letters, such as Czech, Serb-Croat, Polish, Romanian, etc.) shall be that adopted by the country or dominion.
- (2) In colonial possessions the spelling of such place-names as belong to languages coming under Rule (1) will be spelt in accordance with that rule.
- (3) The accents and diacritical marks in official use by the above countries will be retained. Wherever it appears desirable, the pronunciation will be shown by giving the name as transliterated on the system below.
- (4) All other place-names throughout the world will be spelled in general accordance with the following system.

The broad features of this system are—

- (a) That vowels are pronounced as in Italian and consonants as in English:
- (b) That every letter is pronounced, and no redundant letters are used.

This system aims at giving a close approximation to the *local* pronunciation; but it is recognised that in some languages, notably Russian, Greek, and Arabic, the necessity for letter-for-letter transliteration often renders this impossible.

TABLE OF SPELLING AND PRONUNCIATION R.G.S. II.

a	The long and short Italian vowels, as in <i>lāvā</i> ..	Somāli; Rāvennā.*
ā	Between <i>a</i> in <i>fat</i> and <i>e</i> in <i>eh</i> ? ; chiefly in Teutonic and Finno-Ugrian languages	Mähring; Pärnu.
ai	The two Italian vowels, frequently diphthongal, almost as in <i>aisle</i> ; but pronounced <i>ei</i> and <i>ē</i> in Greek names	Wadai; Shanghai.
au	The two Italian vowels; frequently diphthongal; almost as <i>ou</i> in <i>out</i>	Sakau; Bauchi.
aw	When followed by a consonant, or when terminal, as in <i>awl</i> , <i>law</i>	Dawna; Saginaw.
b	As in English.	
c	Not to be used, but always replaced by <i>k</i> or <i>s</i> ; except in the compound <i>ch</i> , and in many conventionally-spelt words, as	Kandahar; Serang. Calcutta; Celébes.
ch	As in <i>church</i> ; never <i>tch</i> or <i>tsch</i> for this sound ..	Chad; Kerch.
d†	As in English.	
dh	Soft <i>th</i> as in <i>they</i> ; a slight <i>d</i> sound sometimes preceding it in Semitic languages	Hadhramaut; Riyadh.
e	Long as in <i>eh</i> ? short as in <i>bet</i> . (For the <i>e</i> sound in the French <i>je</i> , see note at end on the "neutral vowel.")	Gēlo; Mafeking.*
(ee)	Used for <i>i</i> (<i>q.v.</i>) only in a few conventional names	Darjeeling; Keelung.
ei	The two Italian vowels, frequently diphthongal as in <i>rein</i> , but pronounced <i>i</i> in Greek names ..	Beirut; Raheita.
(eu)	Not used as a single sound.	
f	As in English; <i>ph</i> must not be used for this sound	Mustafa; Maidan-i-Naftun.
g	Hard, as in <i>get</i> , <i>gift</i> ; never as in <i>gem</i> , <i>gin</i> ..	Gedāref; Gilgit.
gh	Soft guttural, the Arabic <i>ghain</i>	Ghadames; Baghdad.
h	Used only when sounded; or in the compounds <i>ch</i> , <i>dh</i> , <i>gh</i> , <i>kh</i> , <i>sh</i> , <i>th</i> , <i>zh</i>	Ahmadabad; 'Abdullah.
i	Long as in <i>marine</i> ; short as in <i>piano</i>	Fiji; Kibonde.
j	As in English; except in transcription of Chinese, where it equals <i>zh</i> , or the French <i>j</i>	Juba, Ujiji (Eng. <i>j</i>); but Jaoping (Fr. <i>j</i>).
k	As in English; hard <i>c</i> should never be used (except in conventionally-spelt words)—thus, not <i>Corea</i> , <i>Cabul</i> , but	Korea; Kabul.
kh	Hard aspirated guttural, as in the Scottish <i>loch</i> (not as in <i>lock</i>)	Khan; Sebkhā.
l† m† n†	} As in English.	

*The long and short symbols given here are merely for explanation, not for use.

†See note at end on *Liquid Sounds*.

- ng** Has three separate sounds, as in *vanguard*, *finger*, and *singer*. If necessary to distinguish, a hyphen may be placed, as in *van-guard*, *singer*-. . . In-galla ; Bongo ; Ng-ami ; Tong-a.
- ngg** May be used for the sound of *ng* as in *finger* . . . Trengganu ; Yanggang-a.
- o** Long as in *both*¶ : short as in *rotund* . . . Kigōma ; Hōnōlulu.*
- ō** As in German ; equals the French *eu* in *peu* ; or nearly the English sound in *fur* . . . Barkōl.
- (oo)** Used for *u* (*q.v.*) only in a few conventional names, chiefly Indian and Chinese . . . Poona ; Foochow.
- oi** The two Italian vowels ; frequently diphthongal as in *oil*, but pronounced like *i* in *fit* in Greek names Hanoi.
- ōi** The diphthong as in French *œil* and Norwegian *høi* Hōiland.
- ou** Dissyllabic, and not as French or English *ou*, except in Greek names where it has the French value Zlatoust ; Yaroua.
- ow** Used as a diphthongal combination of *ō* and *w* only in the romanisation of Chinese . . . Hankow.
- p** As in English.
- ph** As in *loophole* ; not to be used for the *f*-sound, except conventionally . . . Chemulpho ; Haiphong.
- q** Represents *only* the Arabic *qaf* and the Hebrew *qof* ; i.e. a guttural *k* (as a rule) . . . Qena ; Qiryath.
- qu** Should never be employed to represent the sound of *kw* ; thus, not Namaqua, Quorra, but . . . Namakwa ; Kworra.
- r** As in English ; should be distinctly pronounced.
- s†** As English *ss* in *boss*, not as in *these* or *pleasure* Burgos ; Masikesi.
- sch** As in *discharge* . . . Peschanka.
- sh** } As in English.
tt }
- th** Hard *th* as in *thick*, not as in *this* (except conventionally in Fijian) . . . 'Athlith ; Thingvellir
- u** Long as in *rude*, or as *oo* in *boot* ; short as in *pull* Zūlū ; Rūanda.*
- ū** As in German : equals the French *u*, as in *tu* (Fr.) Ūskūdar.
- v** }
w } As in English.
x }
- y** Always a consonant, as in *yard* ; it should not be used as a terminal vowel, *e* or *i* being substituted ; e.g. not Kwaly or Wady, but . . . Kikuyu ; Maya. Kwale ; Wadi.
- z** As in *gaze*, not as in *azure*.
- zh** As the *s* in *treasure*, the *z* in *azure*, or the French *j* in *je* ; but for the sound in Chinese use *j* (*vide* note about under *j*) . . . Zhob.

*The long and short symbols given here are merely for explanation, not for use.

†See note at end on *Liquid sounds*.

¶The true Italian *ō* is broader than this ; almost as in *broth* (=R.G.S. II *aw*), The letter *o* is conventionally used for this sound in certain names in Nigeria. Tonga, etc. : e.g. Oyo, Fofoa.

NOTES.

The doubling of a vowel or a consonant is only necessary when there is a distinct repetition of the single sound, and should otherwise be avoided

Nuusafee ; Moorea ;
Jidda ; Muhammad.

Accents should not generally be employed ; but in order to indicate or emphasize the stress, an acute accent may be used

Sarāwak ; Qántara ;
Tong-atábu ; Paraná.

A long or short mark over a vowel (e.g. *ā*, *ō*) should only be used (and that sparingly) when without it there would be danger of mispronunciation ..

Kūt ; Kyōto ; Abōso.

Hyphens will not be used except to indicate pronunciation and with the particle *-i-* (in Persian, Fijian, etc.)

Ta-if ; Pusht-i-Kuh ;
Nuku-i-Ra.

Inverted comma and apostrophe.—The inverted comma ' is employed only to represent the Arabic *'ain*, the Maltese *'ghain*, and the Hebrew *'ayin*. The apostrophe ' in foreign words indicates a liquid sound (*see* below).

Liquid sounds.—The occasional "liquid" or "palatalised" sound of *d*, *l*, *n*, *s*, *t*, etc. (as in *d'you*, *lure*, *naw*, *pursue*, *tune*, etc.) is as a rule sufficiently represented by a following *y* ; where, however, owing to a following consonant, or to the palatalised letter coming at the end of a word, the *y* is inapplicable, the liquid sound will be represented by an apostrophe, thus : *d'*, *l'*, *n'*, *s'*, *t'*, etc.

The "Neutral vowel."—The "indeterminate" or "neutral" vowel sound (*er*), i.e. the sound of *a* in *marine*, *e* in *often*, *i* in *stir*, *io* in *nation*, *o* in *connect*, *ou* in *curious*, *u* in *difficult*, etc., *e* in French *je*, or the often unwritten vowel (*Fat-ha*) in Arabic, etc., is represented as a rule by *a* : as in Basra, Hawiya ; but sometimes by *e*, when the sound approximates more to *e* than to *a* ; as Meshed, El Gezira.

(In any guide to pronunciation issued by the Permanent Committee on Geographical Names, the "neutral vowel" is represented generally by the italic *e* : occasionally also by italic *a* or *u*.)

This sound must not be confused with *e-mute*, where the *e* is not sounded at all : as in Abbeville.

Nasal vowels.—In illustrating the pronunciation of French, Portuguese, Polish, etc., nasal vowels, the nasalisation will be represented by italic *ñ* ; as Częstochowa pr. Chāñstokhóva.

Note.—The Royal Geographical Society has published a book entitled "Alphabets of Foreign Languages transcribed into English according to the R.G.S. II system." This book enables the correct rendering of names to be obtained, also of names in languages which are transliterated letter for letter.

INFORMATION RELATING TO ADMIRALTY CHARTS AND PUBLICATIONS, AND GENERAL NAVIGATION.

ON THE CORRECTION OF ADMIRALTY CHARTS.

Guides to Navigation.—In addition to the charts, the navigational publications which are primarily affected by the continual changes and alterations that take place are the Admiralty Sailing Directions, the Admiralty List of Lights, Fog Signals and Visual Time Signals, and the Admiralty List of Radio Signals. The Admiralty Notices to Mariners contain information mainly for the correction of the charts and navigational publications. 5

CHARTS.

1. Degree of Reliance.—While the Admiralty charts can be relied upon to be correct for all information received, it should be clearly understood that the value of a chart depends on the character of the original survey and on the completeness of the reports of subsequent changes. The remarks on "The Use of Charts as Navigational Aids, &c.", which are subjoined should be carefully studied in this connection. 10 15

2. System of Dating and Issue of Corrected Copies.—Admiralty charts after first publication, are kept corrected by means of new editions, large corrections, and small corrections. Copies of charts issued by the Hydrographic Supplies Establishment, Admiralty Chart Agents or Admiralty Chart Dépôts are corrected, except from temporary and preliminary Notices to Mariners, for all navigational information to the date of issue. 20

New charts.—The date of publication of a chart is shown outside the bottom margin, in the middle, e.g. :— 25

Published at the Admiralty 30th May, 1938.

New Editions.—When a chart is revised throughout and modernised in style a new edition is published, the date being shown outside the bottom margin and to the right of the date of publication, e.g. :— 30

New Edition 2nd Jany., 1938.

All large and small corrections notations are at the same time erased, and all old copies of the charts are cancelled.

Large Corrections.—When a chart is corrected from important information which is too comprehensive to promulgate by Admiralty Notice to Mariners or to insert conveniently by hand on existing copies, but when the chart is not revised throughout, the date on which these corrections are made is shown on the chart outside the bottom margin and to the right of the date of publication, and in the case of a chart already marked with a new edition date, below such date, e.g. :— 35 40

Large corrections 10th Feb., 1938.

All small corrections notations are at the same time erased, and all copies of the chart are cancelled.

Small Corrections.—

- 5 (i) When a chart is corrected from the information promulgated in an Admiralty Notice to Mariners (except temporary and preliminary Notices), the year, if not already shown, and number of the notice are entered in the bottom left-hand corner of the chart, e.g. :—

Small corrections 1938-903.

- 10 Copies of the chart stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents and the Admiralty Chart Dépôts are corrected by hand from such information.

- 16 (ii) When a chart is corrected from information which is considered of no importance from the standpoint of safe navigation, and which is, therefore, not promulgated in an Admiralty Notice to Mariners, the year, if not already shown, and date of the correction are entered on the chart, in one of two ways, in the bottom left-hand corner below the margin and in sequence with the
20 notations referred to in the preceding paragraph, e.g. :—

*Small corrections, 1938—*5.20*—*

or Small corrections 1938—(VI.25)

- 25 These indicate that the chart received minor corrections on the 20th May or 25th June, respectively.

- In such cases copies of the chart held by ships and establishments are not usually replaced by new copies, but in exceptional cases, e.g., when new compasses are inserted, new copies of the charts may be supplied.
30 It should, however, be particularly noted that the absence of corrections represented by square or bracket dates from a chart does not invalidate it for navigation.

3. **Correction of Charts in Ships.**—All small but important corrections affecting navigation that can be made to the charts by
35 hand are promulgated in Admiralty Notices to Mariners and, with the exception of corrections from temporary or preliminary Notices, should at once be neatly made in waterproof red ink on the charts affected, the year (if not already shown) and numbers of the notices being inserted, also in waterproof red ink, in the bottom
40 left-hand corner of the chart. The recognised abbreviations shown on Admiralty chart No. 5011 ("Signs and abbreviations used on Admiralty Charts") should be used.

Generally speaking, the amount of information which should be inserted on a chart should be in accordance with that already shown.

- 45 *On large scale charts*, the abridged descriptions, as shown on chart No. 5011, of all details of all lights, light-buoys and fog signals, and the year dates of obstructions, reported shoals, dredged channels, depth on bars or in shifting channels, and irregularities of lights, should be inserted.

- 50 *On coastal charts*, the abridged descriptions of only the principal lights and fog-signals, i.e., those to assist in approaching or making the land, should be inserted.

Particulars of such lights should be omitted, in the following order, as the scale of the chart decreases, viz. :—

- (i) Elevation, (ii) Period, (iii), Number in Group, and (iv) Visibility.

Particulars of fog signals should be inserted in their appropriate positions if space permits, but should otherwise be entered in a tabulated list under the title or some other convenient place on the chart. 5

Inner harbour light-buoys and beacons should not be inserted on coastal charts, and against other light-buoys only the character of the light should be inserted. 10

On ocean charts, lights which are visible 15 miles or over should alone be inserted and then only their character and colour.

On all charts, writing should be inserted as much as possible clear of the water, unless the relative objects are on the water and care should be taken not to obliterate any information already on the chart. When cautionary or tidal notes, &c., are inserted, they should be written in a convenient but *conspicuous* place, preferably near the title, where they will not interfere with other details. 15

Erasures should never be made but the details should, when necessary, be crossed through in waterproof red ink. 20

Admiralty Notices to Mariners are occasionally accompanied by reproductions of portions of charts (known as “blocks”) and when correcting charts from such blocks the following points should be borne in mind :—

- (i) A block may not only indicate the insertion of new information, *but also the omission of matter previously shown*. The latter would, however, invariably be mentioned in the text of the Notice, and the fact that a block accompanies a Notice should not cause the text of the Notice to be disregarded. 25 30
- (ii) The limiting lines of a block are determined for convenience of reproduction and need not be adhered to when cutting out for pasting on the chart, provided that the point mentioned in the preceding paragraph is taken into consideration. 35
- (iii) The new information shown on a block can sometimes be inserted on the chart by hand, the reason for issuing a block in such a case being to avoid a long description of the new information in the text of the Notice.
- (iv) Owing to distortion the blocks do not always fit the charts exactly, care should therefore be taken when pasting a block on to a chart that the more important navigational corrections fit as closely as possible. This can best be assured by fitting the block while it is dry and making two or three pencil ticks round the edges for use as fitting marks after the paste is applied. 40 45

Corrections from Temporary or Preliminary Notices to Mariners should be inserted on the charts *in pencil* and the year and number of the notice should be shown against them, e.g. :—N.M. 1743 temp. and also in the bottom left-hand corner of the chart, in pencil, *below* the small corrections notations (*see above*). Temporary corrections should be rubbed out when the notice is received cancelling them, but preliminary corrections should be inked in when the notice is received reporting that the changes have been made. 50

Charts stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents and the Admiralty Chart Depôts are *not* corrected from Temporary or Preliminary Notices to Mariners, and when charts are received from one of these sources they should be
5 corrected in pencil as necessary from the copies of such Notices already held, or from those supplied with the charts.

Corrections from Wireless Navigational Warnings concerning derelicts and drifting obstructions, the temporary extinction of lights, displacement of important aids to navigation, ice reports &c., should
10 also be noted *in pencil*, as received, on the charts affected. Wireless Navigational Warnings of a permanent nature and those relating to derelicts and drifting obstructions dangerous to navigation are re-issued in the form of Admiralty Notices to Mariners, but other warnings are not re-issued in this way, except in special circumstances.

15 Corrections from information received from authorities other than the Admiralty should be noted, *in pencil*, on the charts affected, but no charted danger is to be expunged without the authority of the Hydrographer of the Navy.

NAVIGATIONAL PUBLICATIONS.

20 Admiralty Sailing Directions, Supplements, &c.

1. The Admiralty Sailing Directions, consisting of about 70 volumes for the whole world, contain general information useful to the navigator.

An index chart bound near the beginning of each volume shows the area dealt with and the serial numbers and limits of all Admiralty
25 charts for the area which were published *when the volume was printed*.

Each volume is periodically revised throughout, and, in the intervals between the publication of new editions, Admiralty Notices to Mariners and Supplements are published to enable the volume to be corrected. It should, however, be clearly understood that Sailing Directions cannot
30 be correct in all minor details after the date of the latest Supplement.

The above-mentioned corrections are not made in the Sailing Directions stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts.

A new edition of each volume of Sailing Directions is published at
35 intervals of approximately from ten to twelve years. The number of the latest Admiralty Notice to Mariners used in its compilation is given in the "Advertisement" on page iii of each volume, and the numbers of the Notices affecting it between the dates of going to press and issue to ships and establishments are given in the Notice
40 announcing its publication, to enable the new edition to be corrected before being brought into use.

A Supplement to each volume is generally published annually, each succeeding Supplement cancelling the former. When a volume is taken up for revision, however, no further Supplement to that edition
45 is issued, but subsequent Notices to Mariners affecting it are summarised each year and issued as a separate publication, until the new edition of the volume is published.

A tabular form for notation of the existence of Supplements and Summaries of Notices is printed on the front fly-leaf of all Sailing
50 Directions, and these notations are made as necessary in all copies issued by the Hydrographic Supplies Establishment and the Admiralty Chart Depôts.

Supplements and Summaries of Admiralty Notices to Mariners

should be retained intact. *Whenever reference is made to the Sailing Directions, the Supplement must be consulted.* The existence of a Supplement or Summary of Admiralty Notices to Mariners is to be entered in the tabular form inside the cover of the Sailing Directions.

Admiralty Notices to Mariners affecting Sailing Directions *are not to* be cut up and pasted in, but the book is to be annotated in the margin, or corrected in manuscript, as convenient. 5

2. The Admiralty List of Lights, Fog Signals and Visual Time Signals.—The Admiralty List of Lights, Fog Signals and Visual Time Signals for the world is issued in twelve parts divided 10 geographically as shown on the index chart at the beginning of each part.

Light-buoys are *not* included in the list.

The parts are published at intervals of three years, corrected to the 31st December, and in the intervals, Supplements to each 15 part, embodying all corrections to the 31st December, are published annually, the second Supplement in each case cancelling the first. Important amendments to the Admiralty List of Lights are notified in Admiralty Notices to Mariners, and minor amendments in Section III of the complete weekly editions of these Notices. (Section III also 20 includes the important amendments.)

The List should be corrected for amendments published in Section III of the complete weekly edition of the Admiralty Notices to Mariners, in red ink.

Temporary and Preliminary Notices should be noted *in pencil*. 25

These corrections are not made, however, in copies of the List of Lights, &c., stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts, and copies received from these sources shall accordingly be corrected from the Supplements (if any) and weekly editions of the Notices before being 30 brought into use.

3. The Admiralty List of Radio Signals.—The Admiralty List of Radio Signals is issued in three volumes.

Volume I.—Communications—Comprises particulars of radiotelegraph coast stations, together with general regulations; it also includes 35 such subsidiary services as medical advice supplied by radio, together with details of the organisation for transmitting British official messages to merchant ships.

Volume II.—Navigational Aids—Comprises particulars of services from direction-finding stations and radiobeacons, together with 40 radio time signals and navigational warnings (with ice signals); all relevant codes and regulations will be found in this volume.

Volume III.—Meteorological Services—Comprises particulars of weather services provided for the use of shipping (including numerous aviation services of interest to mariners), together with relevant 45 codes and lists of meteorological observation stations and aviation routes.

New editions of each volume will be published annually.

A Supplement of each volume is also issued. The Supplement to Volume I contains corrections between the date of the volume 50 going to press and the 31st of December. The Supplements to Volumes II and III embody all corrections issued between the date of going to press and the date of their issue to Ships and Establishments.

Important amendments to the List are notified in the Admiralty Notices to Mariners, and minor amendments in Section IV of the 55

complete weekly edition of these Notices. Section IV. also includes the important amendments.

Copies of the List stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts are not kept corrected, and Lists received from these sources should accordingly be corrected from the Supplements and from the weekly editions of the Admiralty Notices to Mariners before being brought into use.

4. **The Admiralty Tide Tables.**—The Admiralty Tide Tables are published in three parts, as follows:

Part I, containing tidal predictions for Standard ports. This Part is published annually in two separate Sections, A, Home Waters, and B, Foreign Waters.

Part II, containing data for predicting tides at places which are not Standard ports, and for predicting tidal streams at places where the stream is not semi-diurnal. This Part is published at intervals of about five years with Supplements as required.

Part III, containing instructions for predicting tides and tidal streams, and for analysing observations of tides and tidal streams, with tables to assist prediction and analysis.

THE USE OF CHARTS AS NAVIGATIONAL AIDS AND GENERAL REMARKS RELATING TO PRACTICAL NAVIGATION.

Reliance on a chart.—The value of a chart must manifestly depend upon the accuracy of the survey on which it is based, and this becomes more important the larger the scale of the chart.

To estimate this the date of the survey, which is always given in the title, is a good guide. Besides the changes that, in waters where sand or mud prevails, may have taken place since the date of the survey, the earlier surveys were mostly made under circumstances that precluded great accuracy of detail, and, until a plan founded on such a survey is tested, it should be regarded with caution. It may, indeed, be said that, except in well-frequented harbours and their approaches, no surveys yet made have been so minute in their examination of the bottom as to make it certain that all dangers have been found. The fullness or scantiness of the soundings is another method of estimating the completeness of a chart. When the soundings are sparse or unevenly distributed, it may be taken for granted that the survey was not in great detail.

It appears to be insufficiently realised that the degree of reliance which may reasonably be placed upon an Admiralty chart, even in surveys of modern date, is mainly dependent on the scale on which the survey was made. The scale for publication is now generally that of the original survey, except in the case of coast sheets which are sometimes reduced. It should not, therefore be assumed that the original survey was made on a larger scale than that published.

It must be borne in mind that the principal method of ascertaining the inequality of the bottom of the sea is by the laborious process of sounding, and that in sounding over any area, the boat or vessel obtaining the soundings is kept on given lines; that each time the lead descends, or a sonic sounding is taken, the depth over only a small area is obtained, in the case of the lead, it has a diameter of only a few inches, and that consequently each line of soundings, though miles in length, is only to be considered as representing a narrow width.

Surveys are not made on uniform scales, but each survey is made on a scale commensurate with its apparent importance. For instance, a general survey of a coast, which vessels only pass in proceeding from one place to another is not usually made on a scale larger than one inch to the nautical mile, while surveys of areas where vessels are likely to anchor, are made on a scale of three inches to the mile, and surveys of frequented ports or harbours likely to be used by fleets, on a scale of from six inches to ten inches to the nautical mile.

Close examination by sound is the only method by which surveys on a large scale can be made, and in view of the vast mileage of surveys yet requiring completion in the interests of navigation, it would be a waste of time to undertake large scale coast surveys.

The scale on which a survey is to be conducted having been settled, it is manifestly superfluous to obtain more lines of soundings than 15 can be represented on the paper. 100 soundings, which is the maximum number that can be placed with clearness on every square inch of paper, means that on a scale of one inch to the mile each sounding on the chart occupies an area representing eight acres of actual ground, whilst on a scale of six inches to the mile each 20 sounding represents an area of a little less than a quarter of an acre, i.e., of 100 feet square.

The following diagram represents as many soundings as can be placed legibly on a square inch of paper :—

16	15	13	13	14	12	11	10	9
14	15	14	14	13	13	12	11	9
15	15	14	17	16	14	13	10	9
16	16	17	18	16	12	11	8	9
18	17	15	12	9	7	7	7	9
19	16	12	9	5	4	5	8	9
22	19	16	10	3	5	6	7	8
20	16	12	7	5	6	6	7	8
18	15	11	9	7	7	7	9	11
20	17	14	11	12	10	9	10	11

Little assistance in detecting excrescences on the bottom is afforded by the eye, when sounding in a boat, even in clear weather, on account of the observer being within five feet of the surface ; none in turbid seas. If, therefore, there is no inequality in the soundings to cause suspicion, a shoal patch between two lines may occasionally escape detection.

Lines of soundings plotted as close as may be practicable on a scale of 6 inches to the mile would be 100 feet apart, and each line would be only 2 inches in actual width.

Thus, in a chart on a scale of one inch to the mile, an inequality of some acres in extent rising close to the surface, if it happened to be situated between two lines, might escape detection ; whilst in a chart on a scale of 6 inches, inequalities as large as battleships, if lying parallel with, and between the lines of soundings, might exist without detection if they rose abruptly from an otherwise even bottom.

General coast charts should not, therefore, be looked upon as infallible, and a rocky shore should on no account be approached within the ten-fathom contour line, without taking every precaution to avoid a possible danger ; and even with surveys of harbours on a scale of 6 inches to the mile vessels should avoid, if possible, passing over charted inequalities in the ground, as some isolated rocks are so sharp that the lead may not find the highest part.

Better results can, however, be obtained by sonic sounding owing to the rapidity with which such soundings can be taken, but even this method will not find rocks unless the boat or vessel be directly over them.

- 5 Blank spaces among soundings mean that no soundings have been obtained in these spots. When the surrounding soundings are deep it may with fairness be assumed that in the blanks the water is also deep ; but when they are shallow, or it can be seen from the rest of the chart that reefs or banks are present, such blanks should be
10 regarded with suspicion.

Soundings in hair line, which are shown on the latest charts in upright figures, and on other charts in sloping figures, indicate that such soundings have been taken from smaller scale charts, an unreliable source, or adapted from old and imperfect surveys.

- 15 *Fathom lines a caution.*—Except in plans of harbours that have been surveyed in detail, the six-fathom line on most Admiralty charts is to be considered as a caution or danger line against unnecessarily approaching the shore or bank within that line, on account of the possibility of the existence of undiscovered inequalities of the bottom,
20 which nothing but an elaborate detailed survey could reveal. In general surveys of coasts or of little frequented anchorages, the necessities of navigation do not demand the great expenditure of time required for such a detailed survey. It is not contemplated that ships will approach the shore in such localities without taking special
25 precautions.

The ten-fathom line, is on rocky shores, as before mentioned, another warning, especially for ships of deep draught.

- Charts on which no fathom lines are marked must be especially regarded with caution, as it generally means that soundings were
30 too scanty and the bottom too uneven to enable them to be drawn with accuracy.

Isolated soundings, shoaler than surrounding depths, should always be avoided as there is no knowing how closely the spot may have been examined.

- 35 *Chart on largest scale always to be used.*—It sometimes happens that from press of work, only the copper plate of the larger scale chart of a particular locality can at once receive any extensive re-arrangement of coastline or sounding. This is an additional reason, besides the obvious one of the greater detail shown, why this largest scale chart
40 should always be used for navigating.

- Caution in using small scale charts.*—In approaching the land or dangerous banks, regard must always be had to the scale of the chart used. A small error in laying down a position means only yards on a large-scale chart, whereas on a small scale the same amount of displacement means large fractions of a mile.
45

- For the same reason bearings to near objects should be used in preference to objects farther off, although the latter may be more prominent, as a small error in bearing or in laying it down on the chart has a greater effect in misplacing the position the longer the
50 line to be drawn.

- Graduation.*—All plans are now being graduated in skeleton style before publication in order to facilitate easy reference to astronomical positions ; previously published plans are also graduated as opportunity offers. The graduation is, however, of necessity
55 often based upon imperfect information of a conflicting nature ; for this reason, whenever an astronomical position is quoted other

than approximate (i.e., when seconds are given), it is necessary to quote also the number of the particular chart from which the position has been derived.

In this connection it is pointed out that, whenever possible, a position should be transferred from one chart to another by bearing and distance from a distinguishing feature common to both, such as a point of land or a light, &c., and not by the graduation which may differ owing to one of the charts being constructed on later and more complete astronomical data than the other.

Distortion of printed charts.—The paper on which charts are printed is, from various causes, subject to distortion, but the effect of this is seldom sufficient to affect navigation. It must not, however, be expected that accurate series of angles taken to different points will always exactly agree when carefully plotted upon the chart, especially if the lines are to objects at some distance. The larger the chart the greater the amount of this distortion.

Buoys.—It is manifestly impossible that any reliance can be placed on buoys always maintaining their exact position. Buoys should, therefore, be regarded as warnings and not as infallible navigating marks, especially when in exposed positions; and a ship should always, when possible, be navigated by bearings of fixed objects on shore or angles between them, and not by buoys.

Light-buoys.—The lights shown by light-buoys cannot be implicitly relied on, as, if occulting or flashing, the apparatus may get out of order, or the light may be altogether extinguished. These lights in the British isles are from 5 to 217 candle power.

Cable-buoys.—Cable-buoys marking the ends of submarine cables usually are spherical or can shaped, surmounted by a globe and occasionally a flag. Below the topmark two *white fixed* lights, disposed horizontally, may be exhibited, but they cannot be implicitly relied on.

Lights.—Circles drawn on charts round a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show the same characteristics or colours in all directions, the bearings between which the differences occur.

All the distances given in the Admiralty List of Lights and on the charts for the visibility of lights are calculated for a height of an observer's eye of 15 feet. The table of distances visible due to height, at the beginning of each part of the Admiralty List of Lights, affords a means of ascertaining how much more or less the light is visible should the height of the eye be more or less. The glare of a powerful light is often seen far beyond the limit of visibility of the actual rays of the light, but this must not be confounded with the true range. Again, refraction may often cause a light to be seen farther than under ordinary circumstances.

When looking out for a light at night, the fact is often forgotten that from aloft the range of vision is much increased. By noting a star immediately over the light a very correct bearing may be afterwards obtained from the standard compass.

The intrinsic power of a light should always be considered when expecting to make it in thick weather. A weak light is easily obscured by haze, and no dependence can be placed on its being seen.

The power of a light can be estimated by remarking its candle power, as given in the Admiralty List of Lights, and in some cases by noting how much its visibility in clear weather falls short of the range

due to the height at which it is placed. Thus, a light standing 200 feet above the sea, and only recorded as visible at 10 miles in clear weather, is manifestly of little brilliancy, as its height would permit it to be seen over 20 miles, if of any power. (See table in the 5 Admiralty List of Lights.)

The distance from a light cannot be estimated either by its brilliancy or its dimness.

On first making a light from the bridge, by at once lowering the eye several feet and noting whether the light is made to dip it may be determined whether the vessel is in the circle of visibility corresponding with 10 the usual height of the eye or unexpectedly nearer the light.

Fog signals.—Sound is conveyed in a very capricious way through the atmosphere. The following points in regard to fog signals should be borne in mind :—

- 15 (a) Fog signals are heard at greatly varying distances.
- (b) Under certain conditions of atmosphere, when an air fog signal is a combination of high and low tones one of the notes may be inaudible.
- (c) There are occasionally areas around a fog signal in which it is 20 wholly inaudible.
- (d) A fog may exist a short distance from a station and not be observable from it, so that the signal may not be sounded.
- (e) Some fog signals cannot be started at a moment's notice after signs of fog have been observed.
- 25 Mariners are therefore warned that fog signals cannot be implicitly relied upon, and that *the practice of sounding should never be neglected*. Particular attention should be given to placing "Look-out men" in positions in which the noises in the ship are least likely to interfere with the hearing of the sound of an air fog signal ; as experience shows 30 that, though such a signal may not be heard from the deck or bridge when the engines are moving, it may be heard when the ship is stopped, or from a quiet position. It may sometimes be heard from aloft though not on deck.

Great assistance may be obtained from the wireless fog signals transmitted from many important lighthouses and light-vessels, but the 35 attention of Mariners is called to the serious dangers which may arise from their misuse. No attempt should be made to approach such a signal on a wireless bearing, whilst relying only on hearing the sound fog signal in sufficient time to alter course to avoid danger. When the 40 wireless fog signal is transmitted from a light-vessel, it is essential in order to avoid collision, that the bearing from these signals should not be kept constant.

Tides.—In navigating coastal waters where the range of the tide is considerable, caution is always necessary. The tidal predictions for 45 Standard ports in Part I of the Admiralty Tide Tables can generally be relied upon to give the times of high and low water to within a few minutes, and heights within a few tenths of a foot. Larger errors are to be expected in the predictions for places which are not Standard ports, computed from the data in Part II, but such predictions com- 50 puted from the harmonic constants are always sufficiently accurate for the general requirements of navigation. The heights of the tide at times between high and low water may usually be found within narrow limits in accordance with the instructions in Parts I and III of the Tide Tables.

55 The datums of Admiralty charts depending on Admiralty surveys vary with the type of tide, but usually conform with the International

agreement, that datum should be "a plane so low that the tide will but seldom fall below it." The datums used by different nations, however, differ very considerably and those of Admiralty charts depending on foreign surveys are always those used by the original surveyors, which vary from "lowest possible low water" to "mean low water" in tidal waters, and are usually mean sea level in non-tidal waters. 5

The datum used is always stated on large scale Admiralty charts, and full particulars of these datums will be found in Part III of the Tide Tables. 10

Caution.—Most datums are above the lowest level to which the tide may fall; the charts therefore do not always show minimum depths.

Tidal streams.—Where the tidal streams are semi-diurnal information regarding them is usually given, in a convenient part of the chart, in tabular form or by notes, special symbols being inserted at the positions to which the information refers. In certain cases, where the information available is incomplete, the streams are indicated by means of arrows. 15

Where the streams are not semi-diurnal, information cannot be given on the charts, but the harmonic constants of the stream, if 20 known, will be found in Part II of the Tide Tables.

Tidal streams, particularly if rotary, may vary considerably both in direction and rate; predictions of the stream must therefore always be considered approximate.

The turn of the tidal stream is not usually coincident with the times of high and low water; in fact, though in estuaries, harbour entrances, &c., the stream usually turns at about the times of high and low water, in open channels, and along open coasts generally, the turn usually occurs more nearly at half tide. Predictions of the times of high and low water must therefore never be used as predictions of the times of slack water. 25

It should be remembered that, even where the general direction of the stream is parallel with the shore, an indraught is usually experienced when crossing the entrances to bays and inlets.

Fixing positions.—For further information on this subject, see 30 Admiralty Manual of Navigation.

When in sight of land, every opportunity should be taken of fixing the ship's position by terrestrial objects.

The most usual method is by compass bearings of suitable objects, and it must be borne in mind that a fix by only two bearings is liable to error, either an absolute error in taking the bearings, or those made in applying the deviation or in laying the bearings off on the chart. For these reasons, a third or check bearing of some other object should, when possible, be taken, especially when near the shore or dangers. The intersection of these three lines on the chart will prevent any mistakes if the objects are suitably placed. 45

The most accurate method of fixing a position is by angles between well-defined objects on the chart. All ships are supplied with a station pointer, and this method should be used whenever possible.

Two conditions are, however, necessary for its successful employment; first that the objects be well chosen, and, second, that the observer is skilful, and rapid in his use of the sextant and station pointer. For the former, reference can be made to the pamphlet on the use of the station pointer; the latter is only to be obtained by practice. 50

It will readily be seen that the sextant offers great advantages, as 55 angles can be obtained from any position whence the objects are visible.

In many narrow waters also, where the objects may yet be at some distance, as in coral harbours, or narrow passages among mud banks, navigation by sextant and station-pointer is invaluable, as a true position can only be obtained by its means. A small error in either taking or plotting a bearing under such circumstances may put the ship ashore.

In all cases where great accuracy of position is desired, such as the fixing of a rock or shoal, or the addition to a chart of fresh soundings or new buildings, angles should invariably be used. These should be taken to several objects, the more the better, but five objects is a good number, as the four angles thus obtained not only prevent any errors, but also furnish a means of checking the accuracy of the chart itself. When running a line of soundings, it is only necessary to take a third angle now and then; firstly to make certain that the more important soundings, as at the end of a line, are correctly placed, and, secondly, to check the general accuracy of the chart.

Attention is also directed to the very useful and handy method of fixing by the bearing and distance of a suitable object.

Should the ship be supplied with a rangefinder, its use here is obvious, but without one a very good approximate distance of an object of known height may be obtained, by observing its angle of elevation and obtaining the distance from Lecky's Offshore Distance Tables, which are supplied with all sets of charts.

Full directions for the use of these Tables are given with them.

Sometimes, when only one of the requisite objects is visible from the standard compass, a compass bearing of it and a sextant angle to the other may be used to fix the position.

The method of fixing by doubling the angle on the bow is useful when passing points of land, &c., in waters where there is either no tidal stream or current, or where this can be estimated with sufficient accuracy. This method is as follows:—

Suppose that the angle between the ship's head and an object is measured, and found to be X° , and that the time of the observation is noted. Suppose also that the time is again taken when the angle between the ship's head and the object is $2X^\circ$. Then, if the course made good is the course steered, the distance of the ship from the object, at the time that the second bearing was taken, is equal to the run (over the ground) in the interval. Hence the ship's position can at once be laid off as a bearing and distance from the object. In practice, the angle X° should not be less than about 25° .

The most useful form of this method, the so-called "four point bearing," gives an excellent fix for a departure but does not ensure safety, as the point with its outlying dangers is abeam before the position is obtained.

The above fix is only reliable if either there is no tidal stream or current, or if the stream is running directly with or against the course of the ship; if otherwise, or if leeway is to be allowed for, the above method should never be used, but the ship's position should be obtained by plotting the two bearings and the estimated course and distance made good in the interval.

A table "Distance of an object by two bearings," is supplied with certain chart folios, and is also given in Inman's Tables, by which the ship's position at the time of the second bearing can be found; any two bearings at a suitable angle to each other may be used, together with the run between them, but, again, this table should not be used when the vessel is subject to a cross tidal stream or leeway.

The use of the danger angle in passing outlying dangers with land behind them, should also not be forgotten. A vertical danger angle is useful when the danger lies off an object such as a lighthouse, the height of which is known; the angle being obtained from the afore-said Lecky's Tables. If a horizontal danger angle between two objects is used, however, caution is necessary, as, should the objects not be correctly placed on the chart, the angle taken from it may not serve the purpose. This method should not, therefore, be employed when the survey is old or manifestly imperfect. 6

When fixing by astronomical observations, attention is drawn to the great utility of the position line. Even a single position line may at times give invaluable information, as the ship must be somewhere on this line, provided that the chronometer is correct. 10

A sounding obtained at the same time may often serve to give an approximate position. Again, by steering along, or at a required distance parallel to, a single position line, a vessel may make her port or avoid a danger, although uncertain of her position.

A very accurate position may be obtained by observations of two or more stars at evening or morning twilight, or by the observation of a bright star at daybreak, and another, shortly afterwards, of the sun when a few degrees above the horizon. The position lines obtained from the bodies observed should differ in azimuth by 30° or more. 20

Mariners are also reminded that, with modern tables for correcting the altitude, observations of the moon entail practically no more calculation than those of a planet. Moon sights are sometimes available when stars are obscured by light cloud, &c.; also an excellent position may frequently be obtained by simultaneous observations of the sun and moon. 25

Great use may be made of wireless bearings for fixing the ship, full details of this method, and its limitations, are given in the Admiralty List of Radio Signals. 30

Observations for Errors of the Compass.—No opportunity should be neglected of checking the deviations of the standard compass. When coasting, and a well surveyed and fairly large scale chart is available, an excellent method of observing the deviation is by taking the compass bearing of two suitable objects when in transit, and comparing this with the magnetic bearing from the chart; provided always that the objects are not too close together; also by using any leading lines, the true bearings of which are being indicated in degrees and minutes on the charts, when they are accurately known. When these methods are not available, the deviation should be obtained by azimuths of a heavenly body. 35 40

Deviations should be observed on any change of course on which the ship is steadied for any material space of time; if steering a steady course, the compass error should be observed at least twice a day. 45

Change of variation of the compass.—The gradual change in the variation must not be forgotten in laying down positions by bearing on charts. The magnetic compasses placed on the charts for the purpose of facilitating plotting become in time slightly in error, and in some cases, such as with small scales, or when the lines are long the displacement of position from neglect of this change may be of importance. The compasses are re-engraved when the error amounts to a degree, but the chart plates cannot be corrected more frequently from the impossibility of making alterations often on one spot in a copper plate. 50 55

The geographical change in the variation is in some parts of the

world sufficiently rapid to need consideration. For instance, in approaching Halifax from Newfoundland the variation changes 10° in less than 500 miles, and in the English channel about 5° in 400 miles. The Variation chart should be consulted on this head.

- 5 On certain general charts embracing large areas with considerable change of variation, true compasses are placed instead of magnetic compasses, the variation being shown by *isogonic lines* (curves of equal magnetic variation), in a similar manner to the Variation chart. One or two *isogonic lines* are also sometimes placed on
10 charts, in addition to the magnetic compasses, in order to indicate the general direction of these curves, and thus facilitate the determination of the variation to be employed in portions of the chart not in immediate proximity to any one of the engraved compasses.

- Local magnetic disturbance of the compass on board ship.*—The
15 term "local magnetic disturbance" has reference only to the effects on the compass of magnetic masses external to the ship in which it is placed. Observation shows that such disturbance of the compass in a ship afloat is experienced only in a few places on the globe. Magnetic laws do not permit of the supposition that it is the
20 visible land which causes such disturbance, because the effect of a magnetic force diminishes in such rapid proportion as the distance from it increases that it would require a local centre of magnetic force of an amount absolutely unknown to affect a compass half a mile distant.

- 25 Such deflections of the compass are due to magnetic minerals in the bed of the sea under the ship, and when the water is shallow, and the force strong, the compass may be temporarily deflected when passing over such a spot, but the area of disturbance will be small, unless there are many centres near together.

- 30 They may also be due to wrecks lying on the bottom in moderate depths, but investigations have proved that, while deflections of unpredictable amount may be expected when very close to such wrecks, it is unlikely that deflections in excess of 7° will be experienced, nor should the disturbance be felt beyond a distance of 250 yards.

- 35 It is very desirable that whenever a ship passes over an area of local magnetic disturbance, the position should be fixed, and the facts reported as far as they can be ascertained.

- Use of oil for modifying the effect of breaking waves.*—Many experiences of late years have shown that the utility of oil for this purpose
40 is undoubted, and the application simple.

The following may serve for the guidance of seamen, whose attention is called to the fact that a very small quantity of oil, skillfully applied, may prevent much damage both to ships (especially the smaller classes) and to boats, by modifying the action of breaking seas.

- 45 The principal facts as to the use of oil are as follows:—

1. On free waves, i.e., waves in deep water, the effect is greatest.
2. In a surf, or waves breaking on a bar, where a mass of liquid is in actual motion in shallow water, the effect of the oil is uncertain, as nothing can prevent the larger waves from breaking under such
50 circumstances; but even here it is of some service.

3. The heaviest and thickest oils are most effectual. Refined kerosene is of little use; crude petroleum is serviceable when nothing else is obtainable; but all animal and vegetable oils, such as waste oil from the engines, have great effect.

- 55 4. A small quantity of oil suffices, if applied in such a manner as to spread to windward.

5. It is useful in a ship or boat, both when running, or lying to, or in wearing.

6. No experiences are related of its use when hoisting a boat up in a sea-way at sea, but it is highly probable that much time and injury to the boat would be saved by its application on such occasions. 5

At anchor, when the sea is sufficient to render it difficult to hoist up or in boats, oil bags from forward or from the swinging booms have been found to render the sea alongside comparatively smooth.

7. In cold water, the oil, being thickened by the lower temperature, and not being able to spread freely, will have its effect much 10 reduced. This will vary with the description of oil used.

8. The best method of application in a ship at sea appears to be : hanging over the side, in such a manner as to be in the water, small canvas bags, capable of holding from one to two gallons of oil, such bags being pricked with a sail needle to facilitate leakage of the 15 oil.

The position of these bags should vary with the circumstances. Running before the wind they should be hung on either bow—e.g., from the cathead—and allowed to tow in the water.

With the wind on the quarter the effect seems to be less than in 20 any other position, as the oil goes astern while the waves come up on the quarter.

Lying to, the weather bow and another position farther aft seem the best places from which to hang the bags, with a sufficient length of line to permit them to draw to windward, while the ship drifts. 25

9. Crossing a bar with a flood tide, oil poured overboard and allowed to float in ahead of the boat which would follow with a bag towing astern, would appear to be the best plan. As before remarked, under these circumstances the effect cannot be so much trusted.

On a bar with the ebb tide it would seem to be useless to try oil 30 for the purpose of entering.

10. For boarding a wreck, it is recommended to pour oil overboard to windward of her before going alongside. The effect in this case must greatly depend upon the set of the current, and the depth of the water. 35

11. For a boat riding in bad weather from a sea anchor, it is recommended to fasten the bag to an endless line rove through a block on the sea anchor, by which means the oil is diffused well ahead of the boat, and the bag can be readily hauled on board for refilling if necessary. 40

12. Towing a vessel in a heavy sea, oil is of the greatest service, and may prevent parting the hawser. Distribute from the towing vessel forward and on both sides ; if used only aft the tow alone gets the benefit.

Tropical revolving storms, and practical rules for avoiding them.— 45

1. Tropical revolving storms or cyclones occur for the most part in the tropical or sub-tropical portions of the western sides of the great oceans, with the exception of the South Atlantic ocean where they are unknown. They occur also on the eastern sides of the North Pacific and South Indian oceans, in the Arabian sea and the Bay of Bengal. 50

2. Revolving storms are so named because the wind in these storms revolves round an area of low pressure situated in the centre. The direction of revolution is anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere. The wind, however, does not revolve round the centre of low pressure in concentric circles 55 but has a spiral movement inwards, towards the centre.

3. Tropical storms are known by various names according to the locality in which they are experienced. In the West Indies, on the Pacific coast of Central America and in the South Pacific ocean they are called hurricanes: in the Indian ocean, Arabian sea and Bay of Bengal, cyclones: and in the western part of the North Pacific, typhoons.

4. These storms generally originate between the parallels of 5° and 20° of latitude in both hemispheres and as a rule have initially a progressive movement westward, subsequently recurving towards the pole of the hemisphere in which they are generated. Thereafter, they tend to move north-eastward in the northern hemisphere and south-eastward in the southern hemisphere, so that they invade the temperate latitudes where they may gradually acquire the characteristics of the depressions of such latitudes.

5. Tropical storms are most frequent towards the end of the hot season in both hemispheres. In the Arabian sea and Bay of Bengal, however, they have their maximum frequency and are most dangerous during the transition periods at the beginning and end of the monsoon.

6. The diameter of revolving storms may vary from twenty to some hundreds of miles. Their average rate of progress when moving westward is about 10 knots, but after recurving their average speed increases to about 20 knots. It should be remembered, however, that very great variations from these speeds are likely to occur, and especially after recurving the storms sometimes move very quickly, their rate of travel then occasionally being as much as 50 knots.

7. The winds associated with tropical storms are extremely violent, but in the centre, or eye of the storm, light variable breezes or squalls alternating with complete calms are usually encountered. In this region mountainous seas and a heavy confused swell are experienced. Just outside the central region the strongest winds of the storm system are met, accompanied by violent squalls, and in this area, in well developed storms, it is possible that a wind speed of 150 knots in gusts may be attained. With increasing distance from the centre the wind generally decreases progressively. The aim of the seaman should therefore be to remain as far as possible from the centre of the storm system.

8. The track followed by the centre of the storm is known as the path of the storm, and the portion of the storm field on the right of the path is called the right semi-circle, and that on the left, the left semi-circle.

9. The semi-circle which lies on the side of the track towards the usual direction of recurvature, i.e., the right semi-circle in the northern hemisphere and the left semi-circle in the southern hemisphere, is known as the dangerous semi-circle. It is so called because a ship caught in it may be blown towards the path over which the centre will pass, or the storm may recurve and the centre pass over her.

10. The semi-circle which lies on the side of the path away from the usual direction of recurvature is known as the navigable semi-circle. A ship situated within this semi-circle will tend to be blown away from the path of the storm centre and the recurvature of the storm will increase her distance from the centre.

11. The indications of the approach of a tropical storm are:—

- (a) A swell not caused by the wind then blowing.
- (b) A fall in the barometer which may be divided into three phases:—

- (i) A slow fall during which the diurnal variation is still apparent, and which usually occurs from 500 to 120 miles from the centre of the storm.
 - (ii) A distinct fall during which the diurnal variation is almost completely masked and which usually occurs from 120 to 50 miles from the centre.
 - (iii) A rapid fall usually occurs from 60 to 10 miles from the centre.
 - (c) The reading of the barometer being 2 to 3 mb. below the normal for the time of the year is a probable indication of the formation of a tropical storm in the vicinity.
 - (d) An appreciable change in force and/or direction of the wind.
 - (e) The formation of convergent streaks or bands of cirrus cloud.
 - (f) An ugly threatening appearance of the sky, and lurid sky colourings at sunrise and sunset.
12. In order to judge the best way to act if there is reason to suppose a storm is in the vicinity, a seaman requires to know :—
- (a) the bearing of the centre of the storm ;
 - (b) the path of the centre ;
 - (c) the semi-circle in which the ship is situated.
13. If an observer faces the wind, the centre of the storm will be from 12 to 8 points on his right-hand side in the northern hemisphere, and on his left in the southern hemisphere ; 12 points at the beginning of a storm, gradually decreasing to 8 points towards the centre.
14. The course of the storm centre can be approximately determined by taking two such bearings with an interval of from two to three hours between observations, provided that there has been a wind shift during the interval and that allowance is made for the ship's movement. It can, however, be assumed that the storm is not travelling in a southerly direction, if in the northern hemisphere, or in a northerly direction if in the southern hemisphere ; and if in a lower latitude than 15° its path is most unlikely to have an easterly component, except in the South Pacific eastward of the 180th meridian.
15. If the wind shifts to the right the vessel is in the right semi-circle, if to the left in the left semi-circle ; if the wind is steady in direction but increasing in force, she is in the direct path of the storm.
16. A further check of the bearing and path of the storm may often be obtained by noting the direction from which the swell is coming and any change in this direction. The swell usually travels directly outwards from the storm centre.
17. If in the dangerous semi-circle, i.e., the right semi-circle in the northern hemisphere and the left semi-circle in the southern hemisphere, a steam vessel should steer to windward away from the assumed path of the storm, or stop and lie to if there is insufficient sea room.
- A sailing vessel should heave to, on the starboard tack in the northern hemisphere and on the port tack in the southern hemisphere.
18. If the seaman has reason to believe that his vessel is in the direct path of the storm, or if in the navigable semi-circle (i.e., the left semi-circle in the northern hemisphere and the right semi-circle in the southern hemisphere), he should run with the wind on the starboard quarter in the northern hemisphere and on the port quarter in the southern hemisphere, away from the assumed path of the storm until the barometer begins to rise.
19. Sometimes a tropical storm moves so slowly that a vessel, if ahead of it, can easily outpace it, and if astern of it, can overtake it.

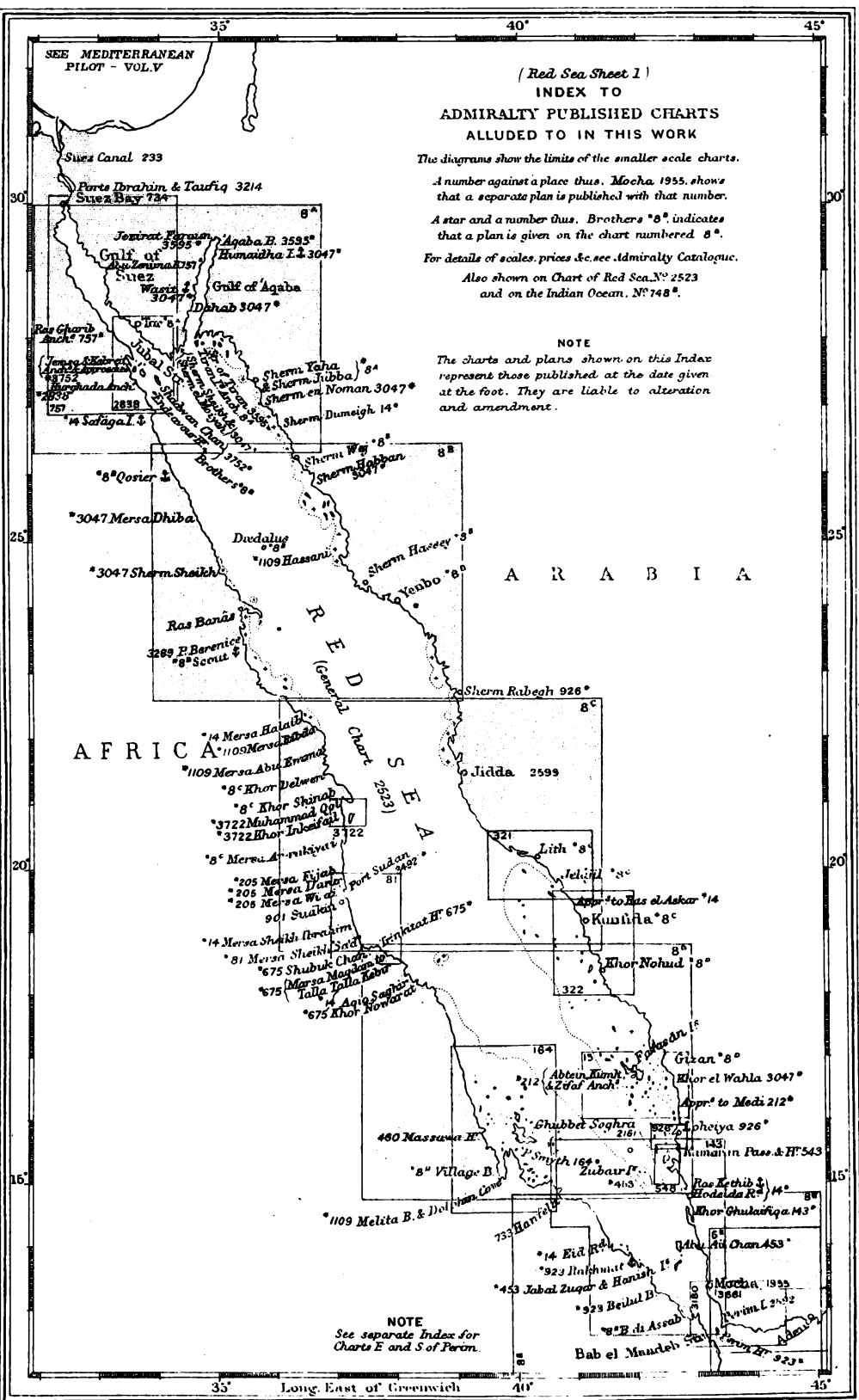
Since, however, she is unlikely to feel seriously the effects of a storm known to be in the vicinity so long as the barometer does not fall below 1005 millibars, it is recommended that frequent readings of the barometer should be made and that the vessel should continue on her course 6 until the barometer falls to 1005 millibars or the wind increases to force 6. If and when the first of either of these events occurs, she should act as described in the preceding paragraphs until the barometer has risen to 1005 millibars or the wind decreased to force 6 or less. Should it be certain, however, that the vessel is behind the storm, 10 or in the navigable semi-circle, it will evidently be sufficient to alter course away from the centre.

20. If there is insufficient room to run when in the navigable semi-circle, a steam vessel should stop and lie to, and a sailing vessel should heave to on the port tack in the northern and on the starboard 15 tack in the southern hemisphere.

21. If in harbour, or at anchor, a seaman should be just as careful in watching the signs and ascertaining the probable path of the storm centre, as he may be able to point his ship, or shift his berth with advantage.

20 22. In regions where tropical storms are encountered the local meteorological services issue special warning messages by wireless during the storm season giving particulars of the position and probable path of any storm which is in the vicinity. Particulars of these messages are given in the Admiralty List of Radio Signals.

25 For the effect of a tropical revolving storm on the current, *see* page 18.



(Red Sea Sheet 1)

INDEX TO

ADMIRALTY PUBLISHED CHARTS
ALLUDED TO IN THIS WORK

The diagrams show the limits of the smaller scale charts.

A number against a place thus, Mocha, 1955, shows that a separate plan is published with that number.

A star and a number thus, Brothers *8*, indicates that a plan is given on the chart numbered 8*.

For details of scales, prices &c. see Admiralty Catalogue.

Also shown on Chart of Red Sea N° 2523
and on the Indian Ocean, N° 148*.

NOTE

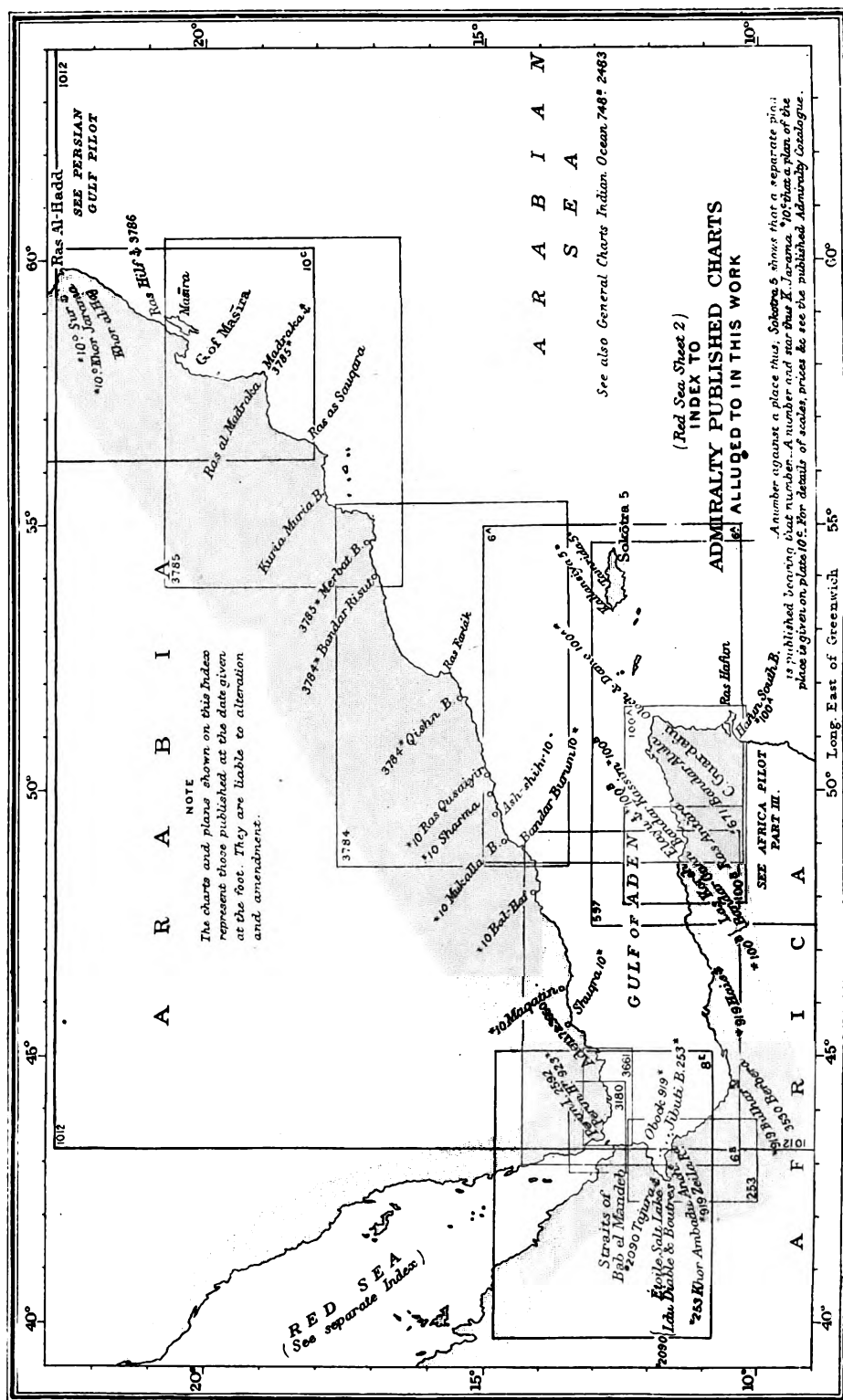
The charts and plans shown on this Index represent those published at the date given at the foot. They are liable to alteration and amendment.

AFRICA

ARABIA

RED SEA

NOTE
See separate Index for
Charts E and S of Peron.



IMPORTANT.

Details of Lights, Fog Signals, and Time Signals (visual) are not included in this volume ; for this information the Admiralty List of Lights, Part VI, should be consulted.

Information regarding Vertical Movement of the Water is not included ; for this the Admiralty Tide Tables should be consulted.

Details of W/T information (weather bulletins, storm and navigational warnings, time signals, fog signals, and D.F. stations) are not included ; for this information the Admiralty List of Radio Signals should be consulted.

Handwritten text on a yellowed, rectangular piece of paper, possibly a label or a page from a book. The text is written in a cursive script, likely from the 18th or 19th century. The paper is mounted on a larger, light-colored surface. A yellow vertical strip is visible on the left side of the paper, and a blue vertical strip is visible on the right side. A small, dark, rectangular object is visible at the bottom left corner of the paper.

RED SEA AND GULF OF ADEN PILOT

CHAPTER I

GENERAL DESCRIPTION OF COUNTRIES BORDERING THE RED SEA AND GULF OF ADEN.—THE RED SEA.—THE GULF OF ADEN.—CURRENTS.—TIDES.—TIDAL STREAMS.—BUOYAGE.—MISCELLANEOUS INFORMATION.—REGULATIONS FOR THE APPROACHES TO ITALIAN PORTS.—REGULATIONS FOR APPROACHING FRENCH TERRITORIAL WATERS IN TIME OF WAR.—RADIO STATIONS.—SIGNALS.—METEOROLOGY

GENERAL REMARKS.—This volume contains a hydrographic description of the Suez canal, the Red sea, the Gulf of Aden, the coast of Arabia east-north-eastward to Ras al Hadd, the eastern coast of Africa from Capo Guardafui to Ras Hafun, and Socotra and adjacent islands.

The following countries border the Red sea and Gulf of Aden.

EGYPT.—Egypt, the north-eastern part of Africa, extends westward from the Red sea into the Libian desert, and southward from the Mediterranean sea to the parallel of 22° N. ; it also comprises the Sinai peninsula and the territory eastward of the Suez canal to a line from about 4 miles westward of the head of the Gulf of 'Aqaba, almost straight, through Rafa, to the Mediterranean shore. Its total area is about 386,000 square miles ; but the cultivated and settled area, that is the Nile valley and delta, and oases, covers only about 12,360 square miles.

The population, in 1937, amounted to 15,904,525, and is predominantly Muhammadan.

Egypt is under the rule of the King, who exercises legislative powers concurrently with the Senate and Chamber of Deputies.

With the exception of Suez there is no port of any consequence on the Egyptian shores of the Red sea.

Physical features.—Except in the valley of the Nile, the only river in Egypt, the country is chiefly desert. Several ranges of mountains intersect the desert between the Nile and the Red sea, the highest being those nearest the coast, which attain elevations up to 7,165 feet

Chart 2523.

(2,183^m9). The land between the mountains and the coast, where they do not closely approach it, is low.

The geological formations are limestone, sandstone, and granite; the latter breaks through and overspreads both the former. The granite region is in the south-eastern part. The Sinai peninsula, or its greater part, is very mountainous; it is a desert of rock, gravel, and boulders, with rugged granitic peaks, ridges, arid valleys, and tablelands; in places where after thunderstorms the water rushes down the main valleys, there are some fertile spots and oases of palms.

10 Products and trade.—The principal products are cotton, wheat, barley, beans, lentils, onions, maize, millet, rice, sugarcane, phosphate rock, petroleum, and manganese ore.

The chief exports are textiles, vegetable products, and food products. The principal imports are textiles, chemical products, mineral products, metals, food products, vegetable products, machinery, vehicles, wood, and paper.

Currency, weights and measures.—The monetary unit of Egypt is the Egyptian pound (£E) of 100 piastres = £1 0s. 6½d.; the piastre = 2.46d. and is divided into 10 milliemes. The Egyptian gold coins are the Egyptian pound and half-pound, but they have not been in circulation for some years; other coins in circulation are 20, 10, 5, and 2 piastre pieces in silver; one piastre piece and 2 and 5 milliemes in nickel; and one and one-half millieme in bronze.

The following weights and measures are in addition to the metric system :—

- 1 cantar = 99.0493 lbs.
 - 1 rotl = 0.9905 lbs.
 - 1 oke = 2.75137 lbs.
 - 1 heml = 550.274 lbs.
 - 30** 1 ardeb = 43.455 gallons.
 - 1 keila = 3.63 gallons.
 - 1 rob = 1.815 gallons.
 - 1 kadah = 3.63 pints.
 - 1 feddan = 5,024.16 sq. yds. or 1.038 acres.
 - 35** The measure of length : Diraa baladi = 0 metre 58 centimetres.
 - " " " weight : Dirhem = 3 grams 12 centigrams.
- Standard time.**—Mean time of the meridian of 30° E. longitude, or 2 hours in advance of Greenwich mean time, is standard time in Egypt.

40 Communications.—In 1940 there were 3,573 miles of railway, and, in addition 879 miles of agricultural light railway. Railways connect Mersa Matruh, Alexandria, Rosetta, Damietta, Port Said, and Suez with each other and with Cairo. A railway runs southward from Cairo, through Siut, to Halfa and Khartoum. The Egyptian railway system connects with the Palestine system by a train ferry at El Qantara.

45 Telegraph and telephone services are maintained by the Government. There are also lines operated by concessionaires from Alexandria, via Cairo, to Suez, and from Port Said to Suez, connecting their cables to England and India. A telegraph line runs from Suez to the quarantine stations at Abu Zenima and Tor; also from Suez to Quseir (Kuseir).

For radio communication, see page 25.

Suez is connected by submarine cables with Perim and Aden, one of which runs via Port Sudan.

Chart 2523.

There is a regular air service with Great Britain, Holland, Italy, Palestine, Cyprus, and Iraq.

There is constant steamer communication from Suez to other ports in the Red sea and to all parts of the world.

The inland water transport companies are carriers of bulky materials. 5
There are over 700 miles of navigable waterways in the Nile delta.

ANGLO-EGYPTIAN SUDAN.—The Anglo-Egyptian Sudan extends southward of the parallel of 22° N. to Uganda and Belgian Congo, approximately the parallel of 5° N., and westward of the Red sea, Eritrea, and Abyssinia to French Equatorial Africa. 10

The area is about 967,500 square miles, and the population, in 1943, was estimated to be 6,342,477.

The Anglo-Egyptian Sudan is administered by a Governor-General, appointed by Egypt with the assent of Great Britain, Khartoum being the seat of Government; it is divided into eight provinces under 15 Governors; the head-quarters of the Port Sudan and Suākin districts is at Port Sudan, under the Commissioner, Port Sudan and Suākin administration.

With the exception of Port Sudan there is no port of any consequence on the Anglo-Egyptian Sudanese shores of the Red sea. 20

Physical features.—The Anglo-Egyptian Sudan may, generally speaking, be divided into two zones; the region northward of about the parallel of 16° N. is practically the continuation of the Sahara desert; the southern region is fertile, abundantly watered and, in places, densely wooded. It is traversed from south to north by the Nile. 25
The most elevated district is the mountainous range about 20 miles from the coast, westward of which the land slopes gradually to the Nile valley. The greater part of the desert between the Red sea and the Nile is known as the Nubian desert, and is a rugged barren waste scored with ravines where there is scanty vegetation. 30

Products and trade.—The Anglo-Egyptian Sudan is the chief source of the world's supply of gum arabic. Egyptian cotton has been well established and its annual production is increasing. Other products include sesamē, senna, nuts, dates, hides, mahogany, chillies, semn, melon-seed, beans, maize, trochus and mother-of-pearl shell, salt, 35 ivory, and gold. The principal grain crops are dura (great millet), the staple food of the people, and dukhn (bulrush millet). The forests, which border the Blue Nile to the frontier of Abyssinia, are rich in fibres and tanning material. Those which border the White Nile contain many valuable trees. The finest gum forests are in Kordofan, 40 Gezira, and Kassala.

The chief exports are cotton and gum. The principal imports are cotton goods, tea, coffee, sacks, metals, tobacco, and wheat.

Money, weights and measures.—The same monetary unit, and units of weight and measure are in use as in Egypt. 45

Standard time.—Mean time of the meridian of 30° E. longitude, or 2 hours in advance of Greenwich mean time, is standard time in the Anglo-Egyptian Sudan.

Communications.—A railway runs from Khartoum, via Halfa, to Cairo, with a branch to Port Sudan and Suākin. Railways also run to 50 Kareima, in Dongola province, Sennār, and El Oveid. A railway runs from Port Sudan to Sennār, passing through Kassala, near the frontier of Eritrea, and Gedaref. The total length of railway is 1,990 miles.

There is a motor transport service throughout the year between Juba and Aba, in the Belgian Congo, a distance of 132 miles ; and between Juba and Nimule, on the Uganda border, a distance of 114 miles.

All the navigable arms of the Nile and its tributaries, between 5 Assuan, in Egypt, and Juba, are served by a fleet of government steamers.

There is telegraphic communication with Egypt, Eritrea, and Abyssinia, and by submarine cables from Port Sudan, with Suez, Jidda, and Aden. The telegraph and telephone services are maintained by 10 the government.

For radio communication *see* page 25.

There is regular steamer communication from Port Sudan to Suez, Aden, and other ports in the Red sea, also to all parts of the world.

ERITREA.—The former Italian Colony of Eritrea lies on the 15 western side of the Red sea between Ras Kasar, in about latitude 18° N., and Ras Dumeira, about 425 miles south-eastward ; it is bounded north-westward and westward by the Anglo-Egyptian Sudan, southward by Abyssinia, and south-eastward by French Somaliland. It includes Dahlach Kebir (Dahlak island) and other islands off it.

20 Asmara is the capital and Massaua (Massawa) the only port of any consequence.

Its area is about 45,754 square miles, and the population is estimated at 600,573, exclusive of 4,188 Europeans.

Physical features.—The coast is coral. The country forms two 25 divisions, the northern is part of the Abyssinian highlands, and the southern is part of a valley, in the southern portion of which are ranges of hills, and lakes, with large plains, which are generally arid, but sometimes covered with mimosa bushes.

Products and trade.—Pasturage is abundant, and the pastoral 30 population is partly nomadic. Irrigation works are being carried on in the lower zone to facilitate intensive production. Salt is produced. There are pearl fisheries at Massaua and amongst the off-lying islands. Gold is produced near Asmara.

The chief exports are hides, salt, dried meat, palm nuts, pearls and 35 mother-of-pearl, wax. The principal imports are cotton goods, millet, iron, steel, wine, coffee, and sugar.

Money.—The legal currency consists of Italian coins.

Standard time.—Mean time of the meridian of 45° E. longitude, or 3 hours in advance of Greenwich mean time, is standard time in 40 Eritrea.

Quarantine.—All vessels arriving at or leaving ports in Eritrea are subject to medical inspection, irrespective of their port of departure or their destination ; vessels will be medically inspected at the anchorage where they must await pratique.

45 **Communications.**—There is railway communication between the principal towns in Italian East Africa and French Somaliland.

There is regular steamer communication with the principal ports and anchorages in Italian East Africa, with other ports in the Red sea, with Aden, Port Said, and all parts of the world.

50 The telegraph and telephone systems are maintained by the government. The telegraph system connects with the Anglo-Egyptian Sudanese system.

There is a regular air service from the most important towns of

Italian East Africa with Anglo-Egyptian Sudan, Egypt, the Mediterranean, and other parts of the world.

For radio communication *see* page 25.

FRENCH SOMALILAND.—French Somaliland lies between Eritrea and British Somaliland, and extends about 48 miles inland to the borders of Abyssinia ; its coast extends from Ras Dumeira to Loya Ada, and includes Golfe de Tadjura. It has an area of about 8,492 square miles, and the population was estimated, in 1939, at 50,000, of whom 2,000 were Europeans. It is administered by a Governor, who resides in Djibouti (Jibuti), and is assisted by an Administrative Council. 5 10

Physical features.—French Somaliland consists of slightly elevated arid areas, largely waterless.

Products and trade.—This country has hardly any industries, but with the coastal fisheries and inland trade there is a considerable traffic. 15 Salt is produced from mines.

The chief imports are cotton goods, butter, coal, and sugar. The principal exports are coffee, ivory, hides, and salt.

Money.—French francs are used ; rupees and Maria Theresa dollars also circulate. 20

Standard time.—Mean time of the meridian of 45° E. longitude, or 3 hours in advance of Greenwich mean time, is standard time in French Somaliland.

Communications.—A railway runs from Djibouti to Harrar and Addis Ababa in Abyssinia ; there is telegraphic communication between 25 these towns, and also communication by submarine cable between Djibouti and Perim.

In 1939, there was frequent steamer communication with Marseille. There was also regular steamer communication between Djibouti, Zeila, Berbera, Aden, and the Red sea ports, also in Golfe de Tadjura. 30

For radio communication *see* page 25.

BRITISH SOMALILAND.—British Somaliland extends from the southern shore of the Gulf of Aden, between Loya Ada and Bandar Ziāda (Zaida), inland to the parallel of 8° N. It is bounded by French Somaliland north-westward ; Abyssinia westward, south-westward, 35 and southward ; and Italian Somaliland south-eastward and eastward. Its area is about 68,000 square miles, and the population is estimated to be about 344,700 ; the inhabitants are Muhammadans, and entirely nomadic, except on the coast, where considerable towns have sprung up during the British occupation. The protectorate is administered by 40 a Governor.

Physical features.—British Somaliland consists of a coastal plain varying from half a mile to 60 miles in width ; an escarpment precipitous at the eastern end, but more gentle at the western, rising to elevations of from 5,000 to 7,000 feet (1,524^m0 to 2,133^m6) ; and an 45 interior plateau sloping gradually southward and eastward to the borders of the protectorate.

Products and trade.—Camels and sheep are raised, and some maize is produced. Trade is chiefly carried on through Aden. The chief exports are skins and hides, gum and resins, ghee, cattle, sheep and 50 goats, and specie. The principal imports are rice, dates, sugar, and textiles.

In 1937, 634 vessels, totalling 110,233 tons, entered the ports of the protectorate.

Money.—Weights and measures.—The Indian rupee is the basis of currency. Government of India notes are in circulation.

- 5 The Imperial standard of weights and measures is in force, but the Indian and Somali traders also use certain weights and measures in force in British India.

Standard time.—Mean time of the meridian of 45° E. longitude, or 3 hours in advance of Greenwich mean time, is standard time in
10 British Somaliland.

Communications.—Inland transport is by camel and motor car. There is a weekly steamer communication with Aden. The Government maintains a post and telegraph service.

For Radio communication *see* page 25.

- 15 **ITALIAN SOMALILAND.**—Italian Somaliland, the northern coast of which lies between Bandar Ziāda and Capo Guardafui, extends southward, within the eastern coast of Africa to Ras Chiambone in Kenya colony. It has an area of about 194,000 square miles, and a population estimated at about 1,500,000, of whom about 1,000 are
20 Italians. It was administered by a Governor.

The predominant religion is Muhammadan, and the principal language on the coast is Swahili spoken in the Bantu tongue.

Physical features.—The geological formations in this territory consist almost entirely of gneiss, granite, and schists.

- 25 **Products and trade.**—The principal occupations of the inhabitants are cattle rearing and agriculture. In the northern part agriculture is almost unknown; the Mijertein tribe, who inhabit this part, rear camels and sheep.

The principal imports are cotton goods, sugar, rice, tea, coffee, iron,
30 machinery, oils, tobacco, wines, and timber. The chief exports are sesamē, oils, gum, hides, butter, cotton, resin, kapok, and fruit.

Money.—Weights and measures.—The currency is the Italian lira, consisting of silver coins and currency notes issued by the Banca d'Italia.

- 35 The unit of weight: 1 Frasla = 36 rotoli = 576 òchie = 16·1 kilos. = 35½ lbs.

The unit of length: 1 Top = 7 cubits = 3·92 metres = 13 feet.

The unit of surface measurement: 10 Darat = 8 ettaro.

The unity of capacity:

- 40 Dry:—1 Chela = 1·359 kilos.

1 Tabla = 15 chele.

1 Gisla = 120 chele.

Wet:—1 Caba = 0·453 litri.

- Standard time.**—Mean time of the meridian of 45° E. longitude,
45 or 3 hours in advance of Greenwich mean time, is standard time in Italian Somaliland.

Communications.—*See* page 4.

For Radio communication, *see* page 25.

- ARABIA.**—Arabia is essentially a desert country comprising an
50 area of roughly 1,000,000 square miles and inhabited for the most part by nomadic Bedāwīn tribes eking out a precarious pastoral existence by the breeding of camels, sheep, and goats. Bounded northward by

Charts 8e, 1012, 597, 2523.

'Iraq and Trans-Jordan, it is enclosed on the other three sides by the sea—the Red sea westward, the Gulf of Aden and the Arabian sea southward, and the Gulf of 'Omān and the Persian gulf eastward.

It is divided into several states of which the Kingdom of Saudi Arabia, Yemen, the Aden protectorate, the Hadhramaut, and 'Omān border the western and southern coasts described in this volume. 5

The population cannot be estimated with any certainty, but would appear to be about 10,000,000.

Physical features.—The land surface of the Arabian peninsula slopes down steadily from the elevated mountain barrier, which extends the whole length of its western side parallel with the Red sea, to sea-level on the Persian gulf, and the uniformity of this slope is only interrupted in the extreme south-eastern corner, where the mountains of the 'Omān district rise to elevations of 10,000 feet (3,048^m0). With the exception of this mountainous district and the similar district of the Yemen, Arabia is a barren country consisting of vast tracts of steppe-desert, sand-waste, and mountainous wilderness. 10 15

Ports.—Vessels are permitted to work cargo at the following ports only:—

Northern ports: Sharm Dhab'a, Yenbo', Wejh (Wej), Umm Lajj 20 (Umm Lej), Sharm Rābigh (Sherm Rabegh), Al Qadhima, Thuwāl, and Jidda.

Southern ports: Al Līth, Al Qunfidha (Kunfida), Khōr al Birk, Khōr Wasm, and Jizān (Gizan).

Vessels working cargo at any other port will be suspected of smuggling and will be liable to penalties as laid down in the Coastguard Regulations. 25

Saudi Arabia.—The Kingdom of Saudi Arabia forms part of the territories of Hejaz (Hedjaz) and Nejd. The frontiers of Saudi Arabia are not sufficiently definite to allow of an accurate estimate of its area, which probably does not exceed 350,000 square miles. The population is probably about 5,000,000, of whom about 80,000 reside at Mecca, the capital, 30,000 at Jidda, and 20,000 at Medina. The chief port is Jidda, the port of Mecca; Yenbo', the next in importance, is the port of Medina. 30 35

In Saudi Arabia clocks are set daily at sunset to 1800.

Physical features.—The coast is coral, bordered by reefs, and within it lies At Tihāma, a low coastal plain varying from about 7 to 30 miles in breadth, but, in places in the northern part, the high land approaches close to the coast; within this plain stands a mountainous ridge of moderate elevation, but rising to a series of granite peaks, from 7,000 to 9,000 feet (2,133^m6 to 2,743^m2) high, eastward of the southern end of the Gulf of 'Aqaba. There is a plateau of great elevation between this ridge and the main ridge, which attains elevations of from 5,000 to 8,000 feet (1,524^m0 to 2,438^m4), and runs parallel with the coast from 40 to 150 miles inland. In the northern part deep ravines, without surface flow, cut up the plateau into a series of detached blocks, but in the southern part there are few ravines, the most important being Wadi Humah, which extends to the sea a few miles southward of Wejh, and drains an area nearly 200 miles in length. 40 45 50

Products and trade.—Medina produces dates, and the oases in the mountains and valleys produce honey and many varieties of fruits; while the Bedāwin products are hides, wool, charcoal, and clarified butter. But the exports of Hejaz are insignificant, and the country

depends for existence almost entirely on the annual pilgrimage to Mecca, which brings large numbers of pilgrims from abroad each year. The chief imports are cotton goods, tea, coffee, sugar, rice, and motor vehicles. There are considerable numbers of camels, horses, donkeys, and sheep.

Money.—The English gold sovereign is the basis of the currency. A silver coin called a Riyal, of which 10 = £1, is sub-divided into 11 Qursh Miri each containing 2 Qursh Darij. The half and quarter Qursh Darij are nickel coins.

10 **Communications.**—There is motor transport between Jidda and Mecca.

There is telegraphic and telephonic communications between the principal towns.

There is regular steamer communication with Suez, Aden, and other Red sea ports.

15 **Yemen.**—Yemen, under the rule of the Zaidi Imam Yahya, has an area of about 75,000 square miles, with a population of between 3,000,000 and 4,000,000. The capital, San'a, a walled city with eight gates, has a population of about 40,000. Yemen lies between Saudi Arabia and the Aden protectorate. The three principal ports are Luhaiya (Loheiya), Hudaida (Hodeida), and Mokha.

Physical features.—At Tihāma, which varies in breadth from about 30 miles in about lat. 16° N. to a few cables near Ras Bāb-al-Mandab, has a comparatively regular, low, and coralline coast, which rises in a long, dusty, even slope to an elevation of about 600 feet (182^m9), at the base of the coast range; this range attains in Mount Shibām, about 40 miles inland in lat. 15° 20' N., an elevation of nearly 9,000 feet (2,743^m2); long spurs project from it into At Tihāma, and it encloses long ravines, the greatest of which are on the eastern side. 25 The uplands between the coastal range and the main range have an average elevation of about 4,000 feet (1,219^m2), and are intersected by hills and ridges, with solitary hillocks. The main range is from 7,000 to 9,000 feet (2,133^m6 to 2,743^m2) high, with occasional summits about 1,000 feet (304^m8) higher, and is seamed with deep ravines and valleys, 30 which are often cultivated and dotted with villages, especially near the borders of the Aden protectorate; its western scarp rises like a wall. Eastward of the main range is a plateau, which slopes north-eastward towards the great central desert.

Products and trade.—Agricultural products are widely distributed throughout the country, and comprise barley, wheat, millet, and coffee, the finest coffee berries come from Menakha. Hides are also largely exported.

Communications.—There are several roads connecting the principal towns, but some of them are little more than tracks, and their state is indifferent. There is telegraphic communication between the principal towns. There is regular steamer communication between Hudaida and Suez, Aden, and other Red sea ports.

Aden.—The colony of Aden, which includes Aden peninsula and Perim island, is about 80 square miles in extent, and is administered by a Governor. The population, in 1942, was about 33,000. There is 50 a British protectorate over the country south-eastward of Yemen, extending eastward to about the meridian of 53° 00' E. The protectorate has an area of about 42,000 square miles. Socotra, an island, with an area of about 1,382 square miles, and a population of about 5,000, is

also under British protection, and the Kuria Muria (Khorya Morya) islands are British possessions; the latter are uninhabited except for Hallāniya and Qibliya islands, which have a few inhabitants.

Physical features.—Aden peninsula is high, rocky, and composed of limestone; it is almost divided from the mainland by a creek. 5 A mountainous range extends eastward and westward in the Aden protectorate from about 15 to 30 miles inland, but in places approaching the coast; its southern side is steep.

Products and trade.—Aden produces little itself, its chief industries being the manufacture of salt and cigarettes. Its trade is largely 10 a transshipment one. The inhabitants of Socotra are mostly pastoral and migratory inland, and fishermen on the coast. The chief imports of the Aden protectorate are cotton goods, grain, hides, tobacco, coal, coffee, sugar, fruits, vegetables, and provisions; the exports are much the same with the addition of salt. In 1939, 2,004 vessels, with an 15 aggregate tonnage of 8,005,764, of which 1,300 were British, entered this port of Aden.

Money.—Indian coinage is in use.

Standard time.—Mean time of the meridian of 44° 58' E. longitude, or 2h. 59m. 54s. in advance of Greenwich mean time, is standard time 20 at Aden.

Communications.—There are no railways in the colony and all transport is by road or by sea. Trade with the interior is conducted mainly by camel caravans, but with the development of the roads 25 more and more motor transport is being brought into use.

Aden is connected with the general telegraph system.

There is constant steamer communication from Aden to all parts of the world.

For Radio communication, *see* page 25.

The Hadhramaut.—The Hadhramaut is a considerable track of 30 fertile valley lying between the coastal ranges and the central desert, which extends eastward from the Aden protectorate to Saihūt. The coastal plain rarely exceeds 10 miles in width, and the coastal ranges approach the coast in places. The inhabitants number about 150,000; agriculture, cattle breeding, fishing, and hunting are their occupations. 35 The chief products are indigo, sesamē, millet, dhurra, wheat and dates; lucerne is grown in some places for fodder. The imports consist mainly of wheat, rice, sugar, cotton goods, and hardware; the exports are small, and consist principally of honey, tobacco, and sharks' fins.

'Omān.—'Omān is an independent Muhammadan state in the 40 eastern district of Arabia; it extends north-eastward from the Hadhramaut to the Gulf of 'Omān, and inland to the desert. The area is about 82,000 square miles, and the population is estimated at 500,000, chiefly Arabs, with a strong infusion of negro blood, especially along the coast. 'Omān is ruled by a Sultan. 45

Physical features.—There are several ranges of hills near the coast from Kuria Muria (Khorya Morya) bay to Ras al Hadd. The mountains in the interior rise to an elevation of 10,000 feet (3,048^m0).

Products and trade.—The trade is mostly in the hands of British Indians, and the imports and exports are mostly from and to India. 50 The principal imports are rice, coffee, and sugar; the chief exports are dates, pomegranates, dried limes, and dried fish. There are no industries of any importance.

Money, weights and measures.—The common medium of

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exchange is the Maria Theresa dollar ; on the coast, but not in the interior, the Indian rupee circulates. There is one small 'Omāni copper coin, which fluctuates in value.

The weights in use are :—

- 5 1 Kiyas = 5·94 oz.
 24 Kiyas = 1 Maskat Maund.
 10 Maunds = 1 Farāsala.
 200 Maunds = 2 Bahār.

Cereals are sold by the following measure :—

- 10 40 Palis = 1 Farrah.
 20 Farrah = 1 Khandi.

Communications.—Muscat (*see* Persian Gulf Pilot) is the only port of call for steamers.

Inland transport is by pack animals.

- 15 **THE RED SEA.**—The Red sea, which extends southward to the Straits of Bāb-al-Mandab, is about 1,200 miles long ; no rivers flow into it, and the northern half is rainless.

- The land adjacent to the Red sea is generally mountainous, but the shores are mostly low and sandy ; the sea is like the bottom of a valley,
 20 on the eastern side of which is the high tableland of Arabia, and on the western side a range of mountains from 4,000 to 6,000 feet (1,219^m2 to 1,828^m8) high.

 Between the shores and the high land are plains of some extent, fertile, but almost entirely uncultivated.

- 25 The Red sea, though, generally speaking, of considerable depth, is encumbered in places with rocky islets and coral reefs, which extend far into the central or main ship channel. They are more numerous in the southern than in the northern part of the sea, the principal being Banco Dahlach (Dahlak bank) and Farasān bank and those in the
 30 vicinity of Zubair and Hanīsh islands.

 The reefs in the Gulf of Suez have generally depths of from 2 to 3 feet (0^m6 to 0^m9) over them, and in summer, when the level of the sea is at its lowest, they occasionally dry in places. A slight ripple always breaks on the weather side of these reefs.

- 35 The reefs, generally, in the Red sea, extend in long strips parallel with the coast, with which many are connected. There is usually a depth of 5 feet (1^m5) or less on the reefs, but the sea seldom breaks over them, and their outer edges are usually steep-to.

- Among the reefs detached from the coast, several are at some
 40 distance from it, with channels between of sufficient depth to be navigable by small vessels with local knowledge, and good anchorage can often be obtained under their lee. The reefs are more numerous on the eastern than on the western side ; but Banco Dahlach is, perhaps, the most extensively intersected by channels. There are also many
 45 isolated reefs, but, owing to the clearness of the water, they can generally be plainly seen, in a good light, from aloft, or from the bridge if it is a moderate height above the water, and therefore do not form a great obstacle to navigation by day. The water outside the reefs, especially when moved by tidal streams or strong winds, is often of a milky
 50 appearance, caused by the coral sand being stirred up. This whitish water frequently indicates a reef, but some reefs, as those at Jidda, are dark green.

 At certain times in summer, when there is smooth water, minute

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particles of seaweed cover large tracts of water with a brown scum, but at the same time many reefs just under water are also covered with the particles, and have the same appearance. Sometimes red or green discolorations caused by algæ make reef discolorations less noticeable.

These tracts of water discoloured by seaweed have often been reported as shoals. During the survey at Jabal at Tâir and Hanîsh islands, in May and June, 1888, large discoloured patches were frequently seen, generally in depths of less than 100 fathoms (182^m9), and they appeared like shoal water from a short distance, but no change was found in the depth.

Central and inner channels.—The islands and reefs in the Red sea divide it into a central and two inshore channels. The central and, for all practical purposes, only navigable channel used by vessels bound through the sea, lies between the reefs extending from either side and has a depth of 1,290 fathoms (2,359^m1) in the middle abreast of Ras Abu Shagara, but the depths decrease towards either end of the sea.

The inner channel on the Arabian side is formed partly by small detached reefs and sunken rocks, and partly by islands and extensive reefs; its general width is considerable, and the anchorages, except those hereinafter described, are so insecure as to afford but little protection. The inner channel on the western side is similar in character to that on the eastern, but much narrower. Both of these inshore channels are connected with the central channel by openings in the reefs, some of which, especially those northward of latitude 17° N., are of great width. The harbours, of which there are several, furnish fair anchorage; but it is unsafe to anchor on the rocky shelves projecting from the reefs.

Navigation amongst coral reefs.—The visibility of reefs and shoals from a vessel depends partly on the clearness of the water, and partly on the position of the sun with reference to the vessel's course. The well-known rule, "keep the sun astern when in coral waters," undoubtedly places the sun in the best position, but occasions constantly occur when this cannot be done, especially where the sun is very high most of the day.

Coloured glasses of a greenish-yellow tint have been found very good for eliminating sun glare; the effect produced by wearing them brings out the contrasts between blue and grey; glasses of any other colour should not be used. A considerable difference has been observed in the light on the water from 5 hours before noon to 5 hours after noon; this may be caused by the eye taking time to get accustomed to the light after the darkness of night.

On many days cloud patches reflected on the sea are quite indistinguishable from reefs, but it should be apparent when this is likely to happen and navigation should be conducted accordingly.

The western edge of a reef exposed to westerly winds is the most clearly defined part and, with any sea, if there are any detached reefs off this edge, they are usually marked by the sea breaking over them, but perhaps it will not break on any detached reefs off the eastern edge as they are under the lee of the main reef. For navigational reasons it might appear well to pass to leeward of the reef where the sea is smoother, but owing to the sea the pinnacle rocks may not be visible; therefore a good rule to follow is: Keep on the weather side of a reef, or, in a calm, on the weather side during the prevailing wind, or on the

side which is most open to seaward ; pass close to the reef and keep the reef line in sight. It is impossible to give definite rules, especially in narrow passages, such as the channels within the Farasān banks, but attention to small points, such as these, may prevent disaster.

- 5 Navigation amongst coral reefs is largely conducted by eye ; in modern vessels, the bridges are usually well forward and at a good height for seeing shoal water. The precaution of placing a look-out man aloft should still be carried out, and a look-out from the forecandle is also important ; at times shoal water has been seen from the deck
10 when it was not visible from aloft. In intricate waters it is well to con the vessel from aloft, but there is the disadvantage that the person aloft is unable to hear the leadsmen.

- The speed of a vessel must be governed by circumstances, but, generally, it should not exceed 6 knots, except when the water is
15 exceptionally clear, and in a surveyed area. In an unsurveyed area a vessel should proceed with the utmost caution, and sound continuously.

A little practice will enable the navigator not only to distinguish the reefs, but also to estimate the depth from the differences in the colour.

- 20 There are advantages in placing the leadsmen where he can be seen from the bridge ; the principal one is that the Navigating officer can often see a shoal cast before the leadsmen calls the sounding. As some leadsmen are very slow in picking up shoal water, they should be instructed that when a sounding is obtained much less than the previous
25 one, they should call " shoaling," thus giving the officer on the bridge warning that the depths are decreasing.

- Caution.**—Depths in the Red sea obtained with Echo Sounding Apparatus, calibrated on the basis of a velocity of sound of 4,800 feet per second, should be increased by 5 per cent. to agree with the charted
30 depths.

- Refraction.**—Excessive refraction and mirage are frequent in the Red sea, causing land, lights, &c., to be visible from much greater distances than those due to their height. In November, 1902, The Brothers islets were seen from a distance of over 100 miles, and the
35 light, the normal distance of the visibility of which is 17 miles, was seen from a distance of 40 miles in June, 1918.

- The excessive refraction causes an apparent elevation or depression of the horizon, and the effect of this may introduce errors up to 20' of longitude and to 10' of latitude in the results of observations. When
40 the longitude obtained from observations in the forenoon is westward of the real longitude, it shows that the horizon was raised by refractions at the times of the observations.

- The refraction affects the result of observations taken before and after noon differently, and so produces an apparent cross current ; to
45 avoid these errors the position should be obtained by observations of stars at morning and evening twilight, when there is reason to believe that the excessive refraction is less frequent than at other times in the day, and when its effect can be minimised by suitable pairing of the stars observed.

- 50 **Luminosity of the sea.**—Occasionally the water in the Red sea and Gulf of Aden suddenly becomes brilliant at night ; this is probably caused by phosphorescence. It occurs both during winds and calms. A stranger may think that his vessel is amongst breakers, but a sounding will show that this is not so.

THE GULF OF ADEN.—The Gulf of Aden, which extends east-north-eastward from the Straits of Bāb-al-Mandab to a line between Ras Baghashwa and Capo Guardafui, is deep, and no rivers or streams of importance flow into it.

On the southern side of the gulf the coast is low and sandy as far eastward as Berbera, thence it is moderately high, the coastal hills being backed by limestone mountains.

Obock, Djibouti, Zeila, and Berbera, are the only ports on the western and southern sides of the Gulf of Aden. Excepting the outlying reefs in the approaches to and southward of Zeila, the coast is clear of dangers and can be approached closely; there is fine weather anchorage off the trading places, in moderate depths. Trade on this side of the gulf is chiefly carried on during the north-east monsoon, October to March.

The northern side of the Gulf of Aden, or the southern coast of Arabia, is principally a wide sandy plain, backed by high sterile mountains; the mountains approach the sea in places.

Aden is the only harbour of importance on the northern side of the gulf.

Except off the coast between Ras Bāb-al-Mandab and Aden, and the approaches to the Gulf of Masīra, there are but few outlying dangers, and temporary anchorage may be found under the lee of most of the prominent capes.

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CURRENTS.—**Red sea.**—The currents in the Red sea are chiefly due to the general monsoons of the northern part of the Indian ocean. The effect of the north-east monsoon is to produce a west-going current in the Gulf of Aden, the water thence passing up the Red sea. The effect of the south-west monsoon is to produce an east-going current in the Gulf of Aden, which draws water out of the Red sea. The monsoon currents of the Gulf of Aden are, however, by no means constant and this fact, combined with the effects of the local winds of the Red sea on the water of that sea, largely account for the very great degree of variability of Red sea currents. On the main shipping track, currents setting in any direction may be experienced throughout the year. The effect of the monsoon is, however, that more currents set along the axis of the sea than in any other direction, as explained more fully below.

Throughout the period of the north-east monsoon in the Arabian sea more currents set in a north-north-westerly direction over the whole of the Red sea than in any other single direction; an increased number of currents also set north-westward and northward. The direct effect of this monsoon is, however, not sufficient to cause the majority of the currents to flow in the above directions; of all possible single directions these are the most frequent, but the sum total of currents setting in all other directions outnumber them, so that the actual majority of currents are of variable set. This is the essential fact about Red sea currents, in both monsoons. During the period of the south-west monsoon in the Arabian sea, more currents similarly set in a south-south-easterly direction over the whole of the Red sea than in any other single direction and the number setting south-eastward and southward is also increased, but currents setting in these three directions are again outnumbered by those setting in all other directions.

The following table shows that in the Red sea, north of the 20th

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parallel, rather less than one-quarter of all currents observed on the main shipping tracks, during the period 1910 to 1933, flow in the axial direction of the sea under the monsoon influence, throughout the year.

- 5 South of the 20th parallel, the proportion is between one-quarter and one-third.

Number of currents setting between north and north-west inclusive (percentage of all currents).		Number of currents setting between south and south-east inclusive (percentage of all currents).	
November to January.	February to April.	May to July.	August to October.
(a) 23 (b) 31	(a) 22 (b) 27	(a) 24 (b) 28	(a) 24 (b) 32

(a) = Red sea, north of lat. 20° N. (b) = Red sea, south of lat. 20° N.

- Throughout the year the prevailing winds in the Red sea, northward of the 20th parallel, are between north and north-west, a definite monsoonal alteration of wind (south-east to north-west) being confined
10 to the sea south of that parallel. The local winds oppose the general monsoonal flow of water in the northern part of the sea in November to April; during the rest of the year in this part of the sea, and during the whole year in the southern part of the sea, the local wind is aiding the general monsoonal flow.

- 15 The transition months, when the flows in the direction of the axis of the sea are least frequent, are April and May, before the south-west monsoon is established, and October, before the north-east monsoon is established. At these times there is little or no current through the Straits of Bāb-al-Mandab. The out-going south-easterly currents are
20 most frequent, in proportion to other currents, in September (northward of lat. 20° N.) and in July and August (southward of lat. 20° N.). The proportion of in-going north-westerly currents is more evenly distributed over the months of the north-east monsoon period.

- The rate of the majority of currents in any direction experienced on
25 the main shipping track of the Red sea does not exceed one knot, and on only extremely rare occasions does the rate exceed 2 knots. Of the currents observed in the period 1910 to 1933 only two were recorded, one of 50 miles per day in July and one of 49 miles per day in March, both in the southern part of the sea. Northward of lat. 20° N., no current attained the rate of 2 knots in this period, the strongest being one
30 of 43 miles per day in December and one of 42 miles per day in August.

- The variability of the currents of the Red sea is to be explained partly by the narrowness of the sea and its irregular coastline. The effect of water being forced up the sea during the north-east monsoon
35 period must produce eddies, giving lateral and reverse flows in the bays between the coastal projections, also in the neighbourhood of islands and reefs. Similar effects in the opposite sense must occur at the season of generally outflowing water. Many of the lateral and reverse currents met in the centre of the sea are due to these causes, while local wind
40 variation, both in the Gulf of Aden and in the Red sea, account for variability in the set of current in other cases.

Chart 2640.

Charts 2939-2950.

Since currents setting in every direction occur in all parts of the axis of the Red sea, a large proportion of all currents have a component in the reverse direction to the monsoonal water movement. Thus when the north-east monsoon is forcing water north-westward up the sea, a large proportion of currents have a component of direction down the sea. Furthermore, current observations show that there is a slight but definite secondary predominance (of single directions) in these directions, south-east to south, which are exactly opposite to the monsoonal flow. The same thing occurs in the opposite sense, during the south-west monsoon period. While water is mainly drawn south-eastward out of the Red sea, there is a secondary predominance (of single directions) which gives a slight but definite flow north-westward up the sea.

The change of sea-level in the Red sea during the year is slight and is accounted for by greater evaporation during summer (*see* page 19). As shown above, there is a partial compensation in the surface flow in most or all months of the year. The final net surface transport of water into and out of the sea in the different monsoon periods is compensated by an approximately equal sub-surface flow in the opposite direction through the Straits of Bāb-al-Mandab. *See* page 143.

The following remarks refer to local currents, not to the observations of currents made on the main shipping track.

Southward of the Strait of Gūbal (Jubal), the local currents are irregular; they are probably caused chiefly by, and generally set with, the prevailing wind. On the Arabian coast, after a north-westerly wind of some duration has fallen light, a strong current sets northward. On the Egyptian coast, from November to March, the strong northerly and north-easterly winds, which sometimes then prevail, cause a strong westerly current, but, on the wind falling light, it sets eastward.

With strong south-easterly winds, a northerly current with a rate of from half a knot to one knot is generally experienced between Great Hanīsh island and Ras Darma, but there is reason to believe that the current is stronger between Great Hanīsh island and the Haycocks than between the Haycocks and Ras Darma; also, that the sea is much heavier between Great Hanīsh island and the Haycocks than farther southward. During the north-east monsoon there is often a heavy sea, from about 15 miles northward of Abu 'Ali islands to about 15 miles farther north-westward. A southerly set has been experienced on the western coasts of Zuqar and Great Hanīsh islands, whilst a strong north-westerly current was running in the offing.

Caution.—As stated above, cross currents, setting in easterly or westerly directions, are not infrequent in all months in the Red sea, and are observed in all parts of the sea, both in the middle of the central channel and elsewhere. A good berth should be given to all outlying reefs and shoals; this is the more necessary as the rate of these currents increases rapidly as the reefs are approached. Constant vigilance is required to guard against them. Caution is particularly necessary when approaching the Strait of Gūbal from southward, and when proceeding southward from the vicinity of the Suākin group to Zuqar island. When a current is setting eastward or westward across part of the sea, it does not follow that the area where this current is running is of great extent; there may be a set in the opposite direction within a few miles.

Chart 2640.

Charts 2939-2950.

Apparent cross currents may be due to errors produced by refraction, *see* page 12, and the very strong cross currents formerly believed to occur at times in the Red sea do not exist. On extremely rare
 5 occasions, easterly or westerly currents were observed on the main shipping track during the period 1910 to 1933 to reach or exceed the rate of 30 miles per day, the highest being at the rate of 44 miles per day.

Gulf of Aden.—The currents of the Gulf of Aden are seasonal, depending on the monsoons of the northern part of the Indian ocean,
 10 so that the rates increase and decrease with the general strength of the wind in the Arabian sea. They are variable and sets in all directions may occur at any time of the year. During the north-east monsoon there is a predominance of currents setting westward over those setting in any other single direction and the number of currents
 15 setting west-north-westward and west-south-westward is also increased. At this season the current sets into the Red sea through the Straits of Bāb-al-Mandab. During the south-west monsoon there is a predominance of currents setting eastward over those setting in any other single direction, and the number of currents setting east-north-eastward
 20 and east-south-eastward is also increased. At this season the current sets out of the Red sea through the Straits of Bāb-al-Mandab. In November to January, 45 per cent. of all currents observed during the period 1910 to 1928 set between west-north-west and west-south-west, inclusive; in February to April, 34 per cent. set in these directions.
 25 In May to July, 43 per cent. of all currents observed set between east-north-east and east-south-east inclusive, while in August to October 35 per cent. set in these directions. Throughout the year, therefore, variable sets exceed in number those in the monsoonal directions. In August to October, however, 21 per cent. of all currents set between
 30 north and north-east, inclusive, so that in this season 56 per cent. of all currents set between north and east-south-east, inclusive.

The rate of the majority of currents setting in any direction in the Gulf of Aden does not exceed one knot, during most months. In July to August, in the height of the south-west monsoon, the proportion of
 35 currents exceeding one knot is higher, about half of all currents. A small proportion of currents exceeding a rate of 2 knots occurs at the height of the north-east and south-west monsoons, principally in July and August, the greatest rate recorded being 71 miles per day, in July. In general the currents are stronger on the Arabian side of the gulf than
 40 in the centre or on the African side; this is especially the case during the height of the south-west monsoon. The westerly current is strong close to Aden during the north-east monsoon, *see* page 154.

Counter-currents may be met with near the African coast, during both monsoons, and currents setting towards this coast have also been
 45 reported, *see* pages 444, 456, and 458. Near the coasts of the gulf the currents are to some extent influenced by tidal streams, but these are weak and irregular, *see* page 20.

Arabian sea.—The currents of the Arabian sea and the east coast of Africa from Capo Guardafui southward are seasonal, depending on the
 50 monsoons. In May, when the south-west monsoon becomes established, the direction of current in the central part of the Arabian sea and the open ocean southward becomes easterly, and so remains until about the end of September; October is the transition month, with variable currents. In November when the north-east monsoon is established,

Chart 2640.

Charts 2939-2950.

the flow is reversed, becoming westerly, and so remains until about the end of March ; April is the transition month, with variable currents. The currents experienced set in all directions, but there is a greater preponderance of sets in the monsoonal direction, between north-east and east during the south-west monsoon, and between south-west and west during the north-east monsoon. In the western part of the Arabian sea, particularly during the south-west monsoon, the currents in the monsoonal direction exceed the total of those in all other directions. This is especially the case in the region southward and eastward of Socotra. 5 10

During the south-west monsoon period, the current, though variable, sets on the average in a clockwise direction round the shores of the Arabian sea. During the height of the north-east monsoon, in November to January, the effect of the monsoon is to reverse the direction of the coastal circulation to anti-clockwise. During the later part of the north-east monsoon period, February to April, the coastal circulation is reversed to the clockwise direction, that is to the direction which it has during the south-west monsoon period, about 3 months before the south-west monsoon is established ; this change of direction takes place round almost all the shores of the Arabian sea about the end of January ; on the south-eastern coast of Arabia, between about longs. 52° E. and 56° E., the change occurs about the end of February. The onset of the south-west monsoon, therefore, merely strengthens the clockwise current, producing no change in its mean direction. 15 20 25

In the western part of the Arabian sea, northward of lat. 12° N., including the region of the coastal current, more than half the currents met during the north-east monsoon period, November to April, do not exceed a rate of one knot ; none exceeds a rate of 2 knots. In May to October the proportion of currents exceeding one knot is greater but in general does not attain a rate of half a knot. Off the south-east coast of Arabia, between longs. 45° E. and 56° E., occasional currents exceed a rate of 2 knots. Between lats. 12° and 14° N., north-eastward of Socotra, about half the currents observed exceed a rate of one knot and about 5 per cent exceed a rate of 2 knots. 30 35

The circulation off the eastern coast of Africa, from about lat. 10° N. to the neighbourhood of the equator, is in the same sense as the coastal circulation of the Arabian sea, being north-easterly, up the coast, during the south-west monsoon period, and south-westerly, down the coast, during part of the north-east monsoon period. The reversal from an anti-clockwise to a clockwise direction takes place about the end of February. The current is thus north-easterly from March to November inclusive and south-westerly from December to February inclusive. The East African Coast current is very strong during the south-west monsoon period, when a large proportion of the currents observed exceeds a rate of 2 knots and, between lats. 2° N. and 10° N., a considerable proportion exceeds a rate of 3 knots, with occasional sets of from 4 to 5 knots. 40 45

The current off the African coast, between lats. 10° N. and 12° N., including Capo Guardafui and Ras Hafun, follows a different régime. It remains northerly throughout the year. The only change is that during the south-west monsoon period the mean direction past Capo Guardafui is north-westerly, while during the north-east monsoon 50

Chart 2640.

Charts 2939-2950.

period it is north-easterly. The reason that no reversal takes place here is that during the whole north-east monsoon period there is no reversal in the open waters of the Arabian sea, as previously stated.

- 5 Part of this westerly flow directed towards the African coast between lats. 10° N. and 12° N., there turns northward and north-eastward past Capo Guardafui into the Gulf of Aden.

- The East African Coast current during the south-west monsoon period divides in about lat. 9° N., the main current turning eastward
10 away from the coast and then south-eastward. About 170 miles due south of the island of Socotra, this set occasionally reaches a rate of 7 knots during the height of the south-west monsoon; this rate is greater than that known for any other oceanic region. When the current is setting strongly south-eastward or east-south-eastward, it is
15 athwart the wind, and there is often a very heavy confused sea over a considerable area in this locality. The current is strongest in July to September, between lats. 9° and 10° N., longs. 53° W. to 55° W. In making the coast of Africa from eastward, care should be taken to avoid the strength of it, by keeping well southward of the locality.
20 Part of the current leaving the East African coast passes into the general easterly monsoon drift of the southern portion of the Arabian sea; the rest, flowing south-eastward, passes into the Equatorial counter-current setting eastward in the region of the equator. The branch which sets past Ras Hafun and Capo Guardafui is of considerably less
25 strength, particularly off Capo Guardafui.

- Effect of a tropical revolving storm on the current.**—In the vicinity of a tropical revolving storm the set and drift of current may be markedly different from that normally to be expected. Comparatively little is known about such currents, particularly near the
30 centre of the storm, since navigators avoid the centre whenever possible, and conditions within the storm field generally are unfavourable to the accurate observation of current.

- The primary cause of the currents is the strong wind associated with the storm; the strength of current produced by a given force of wind
35 varies with latitude and is greatest in low latitudes. For the latitudes of tropical storms, say 15° to 25° , a wind of force 10 would produce a current of about one knot. It is believed that the strength of the currents of tropical storms is, on the average, the same as that which wind of similar force, unconnected with a tropical revolving storm,
40 would produce. These currents, at the surface of the water, set at 45° to the right of the wind direction (in the northern hemisphere) and therefore flow obliquely outward from the storm field, though not radially from the centre.

- Unless due allowance is made for these sets, very serious errors in
45 reckoning may therefore arise. It is reported that, in one case, a vessel experienced a south-easterly set of more than 60 miles, under conditions when the set normally to be expected was south-westerly. In another case, an unexpected south-south-westerly set of 60 miles was experienced in 18 hours. These are examples of currents of
50 abnormal strength, which are occasionally met in the vicinity of tropical revolving storms, and which cannot be accounted for by the wind strength. The possibility of such an experience should be borne in mind, particularly near, say, within 100 miles of the centre of the storm.

Chart 2640.

Other currents, not caused directly by the wind, may flow in connection with these storms, but are probably weak and therefore negligible in comparison with the wind current.

The above remarks apply to the open ocean. When a tropical storm approaches or crosses an extended coastline, such as that of Florida, a strong gradient current parallel to the coast will be produced by the piling up of water against the coast; the sea-level may rise by as much as from 8 to 15 feet (2^m4 to 4^m6) on such an occasion.

Whether the storm is in the open ocean or not there is a rise of sea-level inwards to its centre which compensates for the reduction of atmospheric pressure; the extent of the rise is never great, from one to 2 feet (0^m3 to 0^m6) according to the intensity of the storm; it produces no current so long as the storm is not changing in intensity. If the storm meets the coast, however, the accumulation of water at its centre will enhance the rise of sea-level at the coast mentioned above and so produce a stronger gradient current along the coast.

TIDES.—TIDAL STREAMS.—The tide of the Indian ocean does not enter the Red sea, where a local oscillatory tide, of semi-diurnal type is developed; this oscillation is such that it is high water at the southern end of the Red sea whilst it is low water at the northern end (Shadwân island) and vice versa. Spring range at Shadwân island is about 2 feet (0^m6); at the southern end of the sea, at Massaua and Kamarân bay, spring range is about 3 feet (0^m9). Range decreases from the northern and southern ends to the central area, where near Suâkin and Jidda, there is no appreciable semi-diurnal tide.

There is also a small diurnal tide, which does not oscillate in the same manner as the semi-diurnal; consequently in the central area diurnal tides of very small range occur.

Evaporation in the Red sea is great in summer, causing the sea level to be higher in winter than in summer, but the difference does not exceed about one foot (0^m3). Meteorological conditions, barometric pressure and wind, may also cause appreciable local variations in sea level.

The Red sea oscillation enters the Gulfs of Suez and 'Aqaba and causes tides in those gulfs. In the Gulf of Suez high water is nearly simultaneous over the whole area northward of Ras Ghârib, and occurs about 6 hours later than at Shadwân island; the spring range at Suez is about $4\frac{1}{2}$ feet (1^m4), and the extreme range about $6\frac{1}{2}$ feet (2^m0). In the Gulf of 'Aqaba high water is nearly simultaneous over the whole gulf and occurs from about one to $1\frac{1}{2}$ hours later than at Shadwân island, with a spring range of from 2 to 4 feet (0^m6 to 1^m2).

In the Gulf of Aden the tide is generally diurnal, with an extreme range of about 9 feet (2^m7) at Aden, and of about 10 feet (3^m0) at Djibouti. Eastward of Kuria Muria (Khorya Morya) bay the tide becomes more semi-diurnal in type, though diurnal inequality remains great, with ranges up to about 10 feet (3^m0).

In the Gulf of Suez the stream sets northward while the tide is rising at Suez and southward while it is falling there. Both streams set fairly in mid-channel, at a rate of $1\frac{1}{2}$ knots at springs and of half a knot at neaps, except in the vicinity of Ras Abu Darag (Abu Deraj), Ras Sherâtîb, and Ashrâfi islands, where the directions are uncertain.

In mid-channel in the Strait of Gûbal, at the southern end of the

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Gulf of Suez, the rate of the streams is from $1\frac{1}{2}$ to 2 knots, but within 2 miles of the reefs their directions are uncertain. Near the large reefs the stream during the rising tide sets towards, and the stream during the falling tide away, from them. Between Ashrâfi islands and Sha'ab 'Ali the stream sets northward longer than southward. When the stream and wind are contrary there is a rough sea. On the northern side of Sha'ab Abu Nuhâs there are strong under currents.

In some of the narrow channels near the shores of the Red sea there appear to be tidal streams, but there is no perceptible stream elsewhere until near the Straits of Bâb-al-Mandab.

The tidal streams in the Gulf of Aden are irregular, weak, and frequently masked by the current. On the northern side, eastward to Marbât (Merbat), longitude $54^{\circ} 42' E.$, the stream sets south-eastward during the rising tide, and from Marbât north-eastward to Ras al Hadd the stream sets north-eastward during the rising tide.

BUOYAGE.—In Egyptian waters starboard hand buoys, or those which are left on the right hand when entering a harbour or channel from seaward, are conical; port hand buoys, or those which are left on the left hand when entering a harbour or channel from seaward, are can-shaped.

MISCELLANEOUS INFORMATION. — Deratisation. — In accordance with Article 28 of the International Sanitary Convention of 21st June, 1926, Deratisation can be carried out, and Deratisation certificates and Deratisation Exemption certificates can be issued to vessels at the following ports mentioned in this volume:—

Suez.

Quseir, sailing vessels only.

Port Sudan, in cases of urgency only.

Abnormal magnetic variation.—Abnormal magnetic variation has been reported to have been experienced in the vicinity of Jabal at Tâir, and in the Gulf of 'Aqaba.

Consular stations.—British Consular officers reside at Ismailia, Suez, and Djibouti.

Firing danger areas.—Firing and bombing practices take place in a great number of areas off the coasts of Great Britain, Northern Ireland and Eire, and the number of areas in the waters of Commonwealth, Dominion, Colonial, and Foreign Governments is increasing.

In future, and in view of the responsibility of range authorities to avoid accidents, limits of practice areas will not be shown on charts and descriptions of areas will not appear in the Sailing Directions. Such range beacons, lights, marking buoys or targets as may be of assistance to the Mariner will, however, be shown on charts and when appropriate, mentioned in the appropriate volumes of Sailing Directions.

Lights will be mentioned in the Admiralty Lists of Lights.

The principal types of practices carried out are:—

(a) *Bombing practice from aircraft.*

Warning signals usually shown.

(b) *Air to air, and air to sea or ground firing.*

The former is carried out by aircraft at a large white or red sleeve or flag towed by another aircraft moving on a steady course. The latter is carried out from aircraft at towed or

stationary targets on sea or land, the firing taking place to seaward in the case of those on land.

As a general rule, warning signals are shown when the targets are stationary, but not when towed targets are used.

(c) *Anti-aircraft firing.*

This may be from A.A. guns or machine guns at a target towed by aircraft as in (b) above, or at balloons or kites. Practice may take place from shore batteries or ships.

Warning signals as a rule are shown from shore batteries but not from ships.

(d) *Firing from shore batteries or ships at sea at fixed or floating targets.*

Warning signals usually shown as in (c).

Warning signals, when given, usually consist of red flags by day and *red fixed* or *red flashing* lights at night. The absence of any such signal cannot, however, be accepted as evidence that a practice area does not exist. Warning signals are shown from shortly before practice commences until it ceases.

Caution.—A vessel may be aware of the existence of a practice area from Local Notices to Mariners or similar method of promulgation and by observing the warning signals or the practice.

She should, whenever possible, avoid passing through an area in which a practice is in progress, but if compelled to do so should endeavour to clear it at the earliest possible moment.

If during anti-aircraft, air to air, sea or ground firing practice, projectiles or splinters are observed to be falling near a vessel, she should maintain her course and speed and all persons on board should take cover. Every practicable precaution, however, will be taken by the Authority in charge of the practice to avoid the risk of damage from falling shell splinters, bullets, &c., to vessels and all on board them within the area.

Fuel.—Stocks of coal for bunkering are maintained at Port Ibrâhîm, Aden, Port Sudan, Massaua, and Djibouti. Fuel and diesel oil can be obtained at Port Ibrâhîm, Aden, and Massaua; fuel oil is also obtainable at Port Sudan and Djibouti.

Repairs.—Repairs to vessels can be undertaken at Port Ibrâhîm, Aden, Port Sudan, Massaua, and Djibouti.

Pilots.—**French pilot flag.**—Local native pilots are of service occasionally from their knowledge of the positions of the reefs in their own localities, especially under circumstances unfavourable for piloting amongst reefs by eye.

A pilot flag similar to W flag of the International Code of Signals, but with the colours interchanged, the middle of the flag being blue and the outer border red, is used by pilots at the ports of France and the French colonies.

Vessels requiring a pilot at French ports can display S flag of the International Code of Signals, PT flags of the International Code of Signals, or the special flag described in the previous paragraph.

Submarine cables.—The following articles are taken from the International Convention for the protection of submarine telegraph cables, of 14th March, 1884:—

II.—It is a punishable offence to break or injure a submarine cable, wilfully or by culpable negligence, in such a manner as might interrupt or obstruct telegraphic communication, either wholly or partially, such punishment being without prejudice to any civil action for damages.

This provision does not apply to cases where those who break or injure a cable do so with the lawful object of saving their lives or their ship, after having taken every necessary precaution to avoid so breaking or injuring the cable.

- 5 V.—Vessels engaged in laying or repairing submarine cables shall conform to the regulations as to signals which have been, or may be, adopted by mutual agreement among the High Contracting Parties, with the view of preventing collisions at sea.

When a ship engaged in repairing a cable exhibits the said signals
10 other vessels which see them, or are able to see them, shall withdraw to or keep beyond a distance of one nautical mile at least from the ship in question, so as not to interfere with her operations.

Fishing gear and nets shall be kept at the same distance. Nevertheless, fishing vessels which see or are able to see a telegraph-ship
15 exhibiting the said signals, shall be allowed a period of twenty-four hours at most within which to obey the notice so given, during which time they shall not be interfered with in any way.

The operations of the telegraph-ships shall be completed as quickly as possible.

- 20 VI.—Vessels which see, or are able to see, the buoys showing the position of a cable when the latter is being laid, is out of order, or is broken, shall keep beyond a distance of one-quarter of a nautical mile, at least, from the said buoys.

Fishing nets and gear shall be kept at the same distance.

- 25 VII.—Owners of ships or vessels who can prove that they have sacrificed an anchor, a net, or other fishing gear in order to avoid injuring a submarine cable, shall receive compensation from the owner of the cable.

In order to establish a claim to such compensation, a statement, supported by the evidence of the crew, should, whenever possible, be
30 drawn up immediately after the occurrence; and the master must, within twenty-four hours after his return or next putting into port, make a declaration to the proper authorities. The latter shall communicate the information to the Consular authorities of the country to which the owner of the cable belongs.

- 35 **REGULATIONS FOR THE APPROACHES TO ITALIAN PORTS.**—Sailing vessels, boats, tugs, and other small craft, within a radius of one mile of the entrance to, or within the waters of Italian ports, or in Italian channels, estuaries, or rivers, must keep out of the way of all steam vessels entering or leaving.

- 40 Steam vessels observing a breach of these regulations should sound not less than four short blasts on their whistles or sirens.

Steam vessels navigating in the above areas should do so with caution and at a reduced speed.

- Caution.*—Masters of vessels sighting red flags displayed on shore in
45 Italian territory, or from Italian warships carrying out evolutions or artillery practice, should avoid approaching the area in which these flags are displayed, or closing the men-of-war.

- REGULATIONS FOR APPROACHING FRENCH TERRITORIAL WATERS IN TIMES OF WAR.**—Decree of 1st October,
50 1934:—

1. In time of war the conditions under which vessels, other than French war vessels, may enter and remain in ports and anchorages of

Charts 2523, 1012.

France, her colonies, protectorates, and mandated territories, are governed by the following regulations.

2. No French merchant vessel, nor foreign vessel, either war or merchant, may approach within 3 miles of the coast in the territorial waters of France, her colonies, protectorates, or mandated territories without permission without running the risk of being destroyed. 5

3. Every vessel affected by the present decree must display her national flag on approaching the prohibited zone, and also her International code number ; at night, she must exhibit her navigation lights.

If desirous of entering the prohibited zone in order to reach a port, 10 permission may be asked as follows :—

By day, by displaying the pilot flag (G flag of the International Code of Signals), accompanied, if possible, by PT (a pilot is required) of the International Code of Signals made in Morse code by searchlight.

By night, by making the signal PT (a pilot is required) in Morse 15 code, followed by her International code number, or, if she has no means of doing this, by making the night signal for a pilot in accordance with the International Code of Signals, viz. a *white* light flashed or shown just above the bulwarks at short or frequent intervals for *about a minute* at a time, accompanied, if necessary, by a *blue* light *every fifteen minutes*. 20

The vessel must remain outside the zone until she has received a reply from the signal station or from an examination vessel.

The reply from the signal station or from the examination vessel is made as follows :—

Entry permitted :—

By day, by searchlight, " UI " in Morse code repeated three times, or flags " UI " of the International Code of Signals. 25

At night, by searchlight or flashing light, " UI " in Morse code repeated three times, or by a *white* Very's light.

Entry forbidden :—

By day, by searchlight, " UJ " in Morse code repeated three times, or flags " UJ " of the International Code of Signals. 30

At night, by searchlight or flashing light, " UJ " in Morse code repeated three times, or by a *red-green* Very's light.

If permission is granted, the vessel must enter the prohibited zone 35 at reduced speed, displaying by day flag G of the International Code of Signals, and at night, exhibiting her navigation lights, and must steer for the examination vessel. The latter has normally no distinguishing marks, but if she wishes to show vessels in sight that she is engaged on examination duties, she displays at the masthead 40 a black ball by day and exhibits a *red* light at night or, alternatively, " MAJ " in Morse code three times by flashing light.

If entry be refused, the visiting vessel must immediately alter course and proceed for some other anchorage.

Article 4 relates to certain prohibited zones, none of which is in the 45 area included in this volume.

5. In foggy weather every vessel affected by the present decree, desirous of entering the forbidden zone, is to display the same signals as in clear weather and blow blasts on the whistle or siren until permission to enter has been given by an examination vessel. 50

6. Every vessel affected by the present decree must immediately comply with the orders of a war vessel or examination vessel, or a signal station. These are given either by a warning gun or by a signal of the International Code of Signals.

Charts 2523, 1012.

Any vessel warned by a battery or vessel of war must immediately alter course by more than eight points (90°), and steer so that she remains in sight of signals from the vessel of war or signal station nearest to the battery that warned her. She may not proceed on her
5 former course until authorised to do so.

If the vessel does not alter course after a blank charge has been fired to warn her, a live shell will be fired a few minutes later, and if a vessel does not immediately conform to this order, effective fire will be opened on her.

10 In urgent cases the warning by the firing of a blank charge may be omitted.

At night the warning shot with live shell may also be omitted, and any vessel entering the prohibited zone without permission is liable to be destroyed without preliminary warning.

15 7. Vessels authorised to enter roads and ports in France, or in the French colonies, protectorates, or mandated territories, must keep strictly within the approach channel.

For this purpose they will be piloted by a vessel set apart for this duty. Should a port have no pilotage vessel, the examination vessel
20 will send a pilot on board the visiting vessel.

Vessels must take up the berths assigned to them and conform strictly to the special regulations in force.

The length of stay of a vessel will depend on military considerations, and when circumstances require it a vessel may be ordered to put to sea
25 or to move to a determined point ; such order must be carried out without delay, though respite may be allowed to vessels really unable to conform to it immediately.

No vessel is to get under way, either to change berth or to quit the roads, without the permission of the local authority ; a request may be
30 made by displaying G flag of the International Code of Signals.

8. In naval roads and ports, between sunset and sunrise, the movement of boats, other than those of French war vessels, is absolutely forbidden.

From sunrise to sunset, movement is only allowed to boats which have
35 received a special permit from the naval authorities and the means of making themselves recognisable.

Boats with permits should steer clear of war vessels if ordered to do so, and cannot in any case go alongside the latter without their permission. The movement of these boats will moreover remain subject to
40 local regulations, notably those relative to the prohibition to enter certain parts of the roadstead, and to go alongside at any other place than those expressly notified.

In commercial ports similar measures will be taken by the local authority to impose the restrictions judged necessary on the movement
45 of boats, due consideration being given to the interests of commerce.

9. Visits by neutral war vessels are governed by the decree of 29th September, 1929, so far as notification or previous authorisation is concerned, the regulations for entry being governed by the present decree.

50 10. The measures provided for by the present decree are to come into force on mobilisation or on special notice.

11. Any infraction of the present decree will lead to such repressive measures as circumstances admit of, in addition to the risks of destruction incurred.

RADIO STATIONS.—Coastal radio stations in the area covered by this volume which are open for public correspondence are established at Tor and Quseir (Kosseir in List) in Egypt; Port Sudan in Anglo-Egyptian Sudan; Kamarān; Massaua and Assab in Eritrea; Djibouti in French Somaliland; Berbera in British Somaliland; 5 Bandar Cāssim, Alula, Francesco Crispi (Capo Guardafui) and Dante (Ras Hafun) in Italian Somaliland; Aden in the Aden protectorate.

For details, except of Kamarān station, *see* list published by the Bureau of the International Telecommunication Union.

For details of Kamarān station and of Radio stations which transmit 10 weather bulletins, navigational warnings, time signals, &c., *see* Admiralty List of Radio Signals.

SIGNALS.—**Aircraft distress signals.**—Any aircraft in grave or imminent danger, and requiring immediate assistance, will make or display one or more of the following signals:— 15

1. The International distress signal S O S, by rodio, as prescribed in the Admiralty List of Radio Signals.
2. The spoken word "Mayday" by radio telephony, as prescribed in the Admiralty List of Radio Signals.
3. The International distress signal S O S, by visual signalling or 20 any sound apparatus.
4. The International Code flag signal N C.
5. The International Code distance signal consisting of a square flag having above or below it a ball or anything resembling a ball.
6. A continuous sounding of any sound apparatus. 25
7. A succession of *red* pyrotechnic lights fired at short intervals or a *red* flare from which, at intervals of about *three seconds*, a *red* light is ejected.

Urgent signals from aircraft.—An aircraft, having a very urgent message to communicate to a vessel concerning the safety of any 30 aircraft, vessel or person, within range of assistance, will fly low around the vessel firing a succession of *green* pyrotechnic lights or will flash a succession of *green* flashes with the daylight signalling apparatus. The aircraft will then signal the message as prescribed in the International Code of Signals; or alight alongside the vessel; or, if unable to 35 signal or alight, will fly towards the aircraft, vessel or person in distress. When the *green* pyrotechnic lights are seen from the vessel, a boat is to be prepared for lowering.

The signals from the aircraft are to be acknowledged from the vessel by flashing the answering sign, both by day or at night, with the day- 40 light signalling apparatus; if no such apparatus is carried, the answering pendant is to be hoisted close up, by day, and, at night, a *white* light is to be waved in a position away from other sources of light.

If an aircraft is in difficulties which compel her to land, but is not in need of immediate assistance, she will fire a succession of *white* pyro- 45 technic lights or, at night, if not in possession of pyrotechnic lights, she will make a succession of short flashes with her navigation lights.

Non-urgent signals from aircraft.—An aircraft wishing to communicate with a vessel on a matter of no urgency, will fly around the vessel to attract attention. 50

Signal station.—There is a signal station at Aden, through which reports can be transmitted through Lloyd's.

Signals to be made by vessels when inconvenienced by

Chart 2523.

searchlights.—In the event of the navigation of a vessel being inconvenienced by the glare from searchlights near a port in the British Empire, she should make the International Code signal Z O (— — . . — —) by lamp and by whistle, siren or fog horn. Both
 5 the light and sound signals should be employed, whenever possible, and should be repeated until the inconvenience is removed.

Only real urgency should necessitate the use of this signal as, unless the vessel is actually in the rays of a searchlight, it is not possible for the operators to know which projector is affected.

10 This signal is designed to assist mariners; no liability whatever will be admitted.

This signal should also be used in similar circumstances near ports in other countries.

Submarine vessels.—*Caution.*—British vessels, when engaged in
 15 hunting enemy submarines, display a cone over a red rectangular flag; vessels are cautioned to steer so as to give a wide berth to any vessel displaying such signal.

British vessels, which, knowing that a friendly submarine is submerged in the close vicinity, wish for particular reasons to warn other
 20 vessels that they should keep clear, display a red rectangular flag at the masthead. This flag is not normally displayed by vessels exercising with submarines.

All vessels are cautioned to steer so as to give a wide berth to any vessel displaying such a flag. If from any cause it is necessary to
 25 approach her, vessels should proceed at slow speed until warning is given of the danger zone by flags, semaphore or megaphone, &c., a good lookout being kept meanwhile for submarines whose presence may only be indicated by their periscopes showing above water.

A submarine, submerged at too great a depth to show her periscope,
 30 may sometimes indicate her position by releasing a smoke candle which gives off a considerable volume of smoke on reaching the surface, or by the discharge of oil.

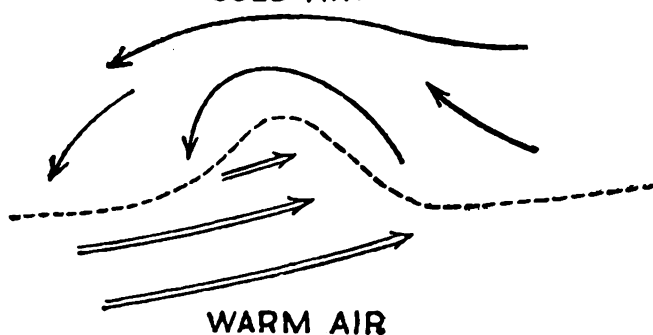
It must not be inferred from the above that submarines exercise only when in company with escorting vessels.

35 **METEOROLOGY.—Depressions.**—A depression is a region of the atmosphere where pressure is lower than elsewhere. It appears on the synoptic chart as a series of isobars roughly circular or oval in shape, surrounding an area of low pressure. It is characterised by unsettled weather and often strong winds. In the northern hemisphere
 40 the winds blow round an area of low pressure in an anti-clockwise direction; there is also a slight inclination across the isobars. Thus the well known rule for the northern hemisphere is that when an observer faces the wind the lowest pressure is from 8 to 12 points to his right.

45 According to the Norwegian theory of depressions, which has now been generally accepted, most depressions form at the boundary of two air currents of different temperatures and characteristics which are in juxtaposition, a tongue of warm air projecting into the cold air and the centre of depression being at the tip of the tongue of warm air (Fig. 1).
 50 The disturbance so formed moves forward along the boundary of the two air currents. Thus in its early stages a depression has a warm sector. The boundaries between the warm and cold air streams are known as "fronts." At the front of the warm air stream, known as the "warm front," the warm air is rising gradually over the cold air; this causes
 55 condensation of the water vapour in the warm air, forming at first cloud

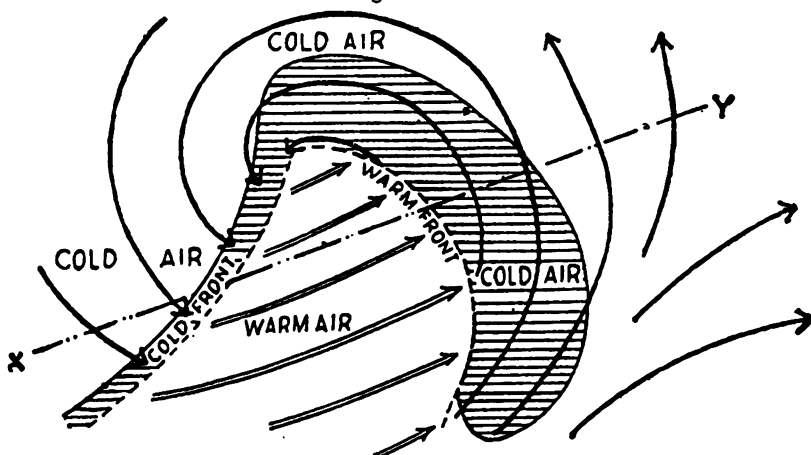
and later drizzle or continuous steady rain. The cloud spreads out ahead of the warm front, and the highest cloud, cirrus or mares' tails, is often about 500 miles ahead. At the rear boundary of the warm sector, known as the "cold front," the cold air is pushing under the warm air forcing the latter to ascend rapidly; this process is sometimes violent enough to produce squalls. The rapid ascent of the warm air causes the moisture to condense in the form of cumulonimbus clouds (shower clouds), from which heavy showers may fall (Figs 2a and 2b). The warm sector is thus being gradually lifted up from the earth's surface. When this has occurred the depression is said to be "occluded," and the warm and cold fronts merge in a "line of occlusion" (Figs. 3a and 3b). When a depression has become occluded, it usually decreases in intensity and rate of travel, and gradually fills up. On the other hand, a depression which has a marked warm sector is likely to be deepening, the winds associated with it may increase in force and its rate of travel may increase. Depressions are usually travelling in a direction approximately parallel to the isobars in the warm sector.

Fig. 1.
COLD AIR



A depression forming at the boundary of two air currents.
The double lines show the flow of the warm air, and the single lines the flow of the cold air.

Fig. 2a.



Plan of a developed depression.
The double lines show the flow of the warm air, and the single lines the flow of the cold air.
The shading shows the areas where rain (or snow) may be expected.

Fig. 2 b.

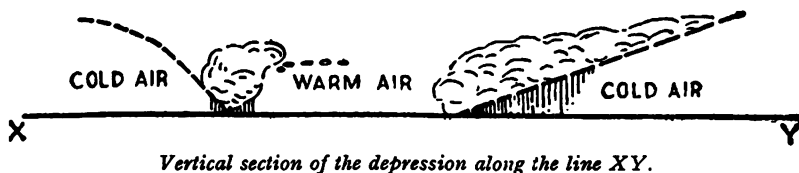
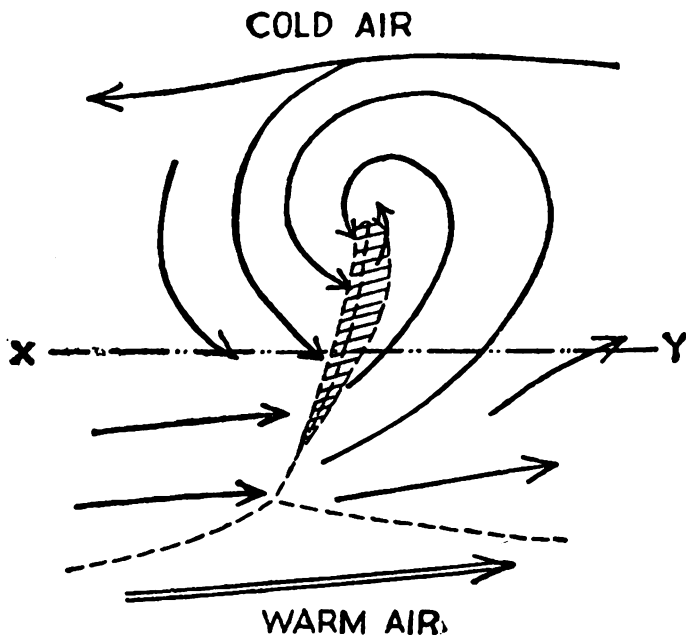
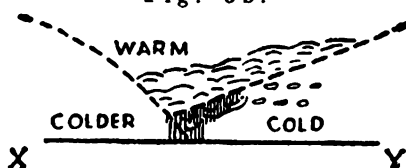
*Vertical section of the depression along the line XY.*

Fig. 3 a.

**WARM AIR.***Plan of an occluded depression.*

The shading shows the region where rain (or snow) may be expected near the occlusion.

Fig. 3 b.

*Vertical section of an occlusion of the cold front type.*

The air in front of the occlusion is warmer than the air behind it.

Depressions may move in almost any direction, but they most often move from any one position to a position further east; they tend to travel over the sea rather than over the land. Their rate of movement is very variable, and sometimes depressions are stationary for a time; speeds between 15 and 25 knots are common in the northern hemisphere. Depressions vary very much in size; the smallest may have a diameter of less than 100 miles, while the diameter of the largest may exceed 2,000 miles.

The approach of a depression is indicated by a falling barometer. In the northern hemisphere if the depression is approaching from

westward and passing northward of the ship, clouds appear on the western horizon, the wind shifts to south-east or south and freshens, the cloud layer gradually lowers, and finally drizzle, rain or snow begins. If the depression is not occluded, after a period of continuous rain or snow there is a veer of wind at the warm front, a rise of temperature and diminution of rain (or snow) in the warm sector, the visibility being moderate. The passage of the cold front is marked by the approach from westward of a thick bank of cloud, a further veer of wind to west or north-west, sometimes with a sudden squall, rising pressure, a fall of temperature, squally showers of rain, hail or snow, and improved visibility (except during showers). The squally, showery weather with a further veer of wind and drop in temperature may recur while the depression passes. If the depression is occluded, the occlusion is preceded by the cloud of the warm front; there may be a period of continuous rain mainly in front of and at the line of occlusion, or a shorter period of heavy rain mainly behind the occlusion, according as the air in front is colder or warmer than that behind it. There may be a sudden veer of wind at the line of occlusion. Often another depression follows, in which case the barometer begins to fall again and the wind backs towards south-west or south.

If a depression travelling eastward or north-eastward is passing southward of the ship, the winds in front of it are easterly and they back through north-east to north or north-west; changes of direction are not likely to be so sudden as on the southern side of the depression. In the rain area there is often a long period of continuous rain and unpleasant, thick weather with low cloud. In winter, in the colder regions the weather is cold and raw and precipitation is often in the form of snow.

Near the region of lowest pressure, lulls are sometimes experienced, but sudden changes are likely and, in a deep depression, the wind may increase in strength very rapidly, perhaps to gale force, as the barometer begins to rise.

Sometimes in the air circulation of a large depression, usually on the equatorial side and often on a cold front, a secondary depression develops, travelling in the same direction as the primary but usually more rapidly. The secondary often deepens while the original depression decreases in intensity. In the region between the primary and the secondary depressions, the winds are not as a rule strong; but on the further side of the secondary, usually the southern side, winds are likely to be strong and they may reach gale force. Thus the development of a secondary depression may cause gales at a greater distance from the primary depression than anticipated, while there may be only light winds where gales were expected.

The above is a brief general description of depressions and the associated weather in temperate latitudes of the northern hemisphere. It must be emphasised, however, that individual depressions in different localities differ considerably from one another, according to the characteristics (especially the temperature and humidity) of the air currents of which they are composed, and the nature of the surface over which they are travelling.

General conditions.—The whole region covered by this volume is extremely hot in summer, whilst the southern part of the Red sea, with its coastal regions, are among the hottest parts of the earth. The air over the southern regions is humid, which aggravates the effect of the heat, and renders the climate very sultry and oppressive. Death from heat apoplexy is not uncommon during the months of April to October in the central and southern parts of the Red sea area. In vessels

proceeding southward during this season the great heat is often intensified by a light following wind of insufficient force to pass through the vessels. An important feature of the climate is the continuous, powerful sunshine, of which eight hours may be expected in the Red sea area on almost every day of the year, owing to the small average amount of cloudiness.

The cooling effect of air on a perspiring human body depends partly on conduction and partly on evaporation. The combined effect of high temperature and humidity is indicated by the wet-bulb temperature. A value of 78° is generally regarded as the wet-bulb temperature above which continuous hard physical labour is impracticable for Europeans in calm weather, and 85° or 86° seems to be near the limit of endurance. As conditions on board ship may be somewhat worse than ashore, 75° is considered the limiting value of the wet-bulb. In the Red sea the wet-bulb temperatures are exceptionally high; average readings over the open sea in various months are as follows:—

	Red sea.			Gulf of Aden.
	latitude 27° N.	latitude 21° N.	latitude 15° N.	°
January	61	67	74	72
April	69	75	78	79
July	77	81	84	81
October	74	80	80	78

The occurrence of sandstorms and the frequent presence of sand or dust in the air adds to the discomfort of the hot season. The fine impalpable dust is distressing to sight and to breathing while these storms last. At times sandstorms are dangerous to navigation, owing to the sudden obscurity caused by them, which may reduce visibility to distances varying between a mile and 30 or 40 yards. These storms are most prevalent during the south-west monsoon period, but may occur in any month.

The climate is most favourable in winter, especially at Suez and the extreme north of the region generally, where the winter temperatures fall to relatively low values. In the central and southern areas, the difference between summer and winter temperatures is much less marked. From January to March the weather is generally clear, cool, and agreeable, and these are the three principal months for the coastal trade.

Over the Red sea the predominant winds blow parallel with the general trend of the coasts, being north-westerly throughout the year, except in that part of the sea southward of lat. 18° N. where winds are south-easterly from October to April.

In the Gulf of Aden winds are easterly or north-easterly from December to March, the season of the north-east monsoon. April and May are transition months, when the reversal of wind direction to the south-westerlies of the south-west monsoon takes place over the Arabian sea. From June to September steady westerly winds prevail in the gulf and over the open ocean eastward. In October and November the westerly winds disappear and give place to north-easterly ones.

Disturbed weather, due to the passage of depressions northward, may be experienced during the winter months in the northern part of the Red sea.

During the south-west monsoon and the transition months, tropical cyclones from the Arabian sea may travel towards the south-eastern coast of Arabia, but only very rarely enter the Gulf of Aden.

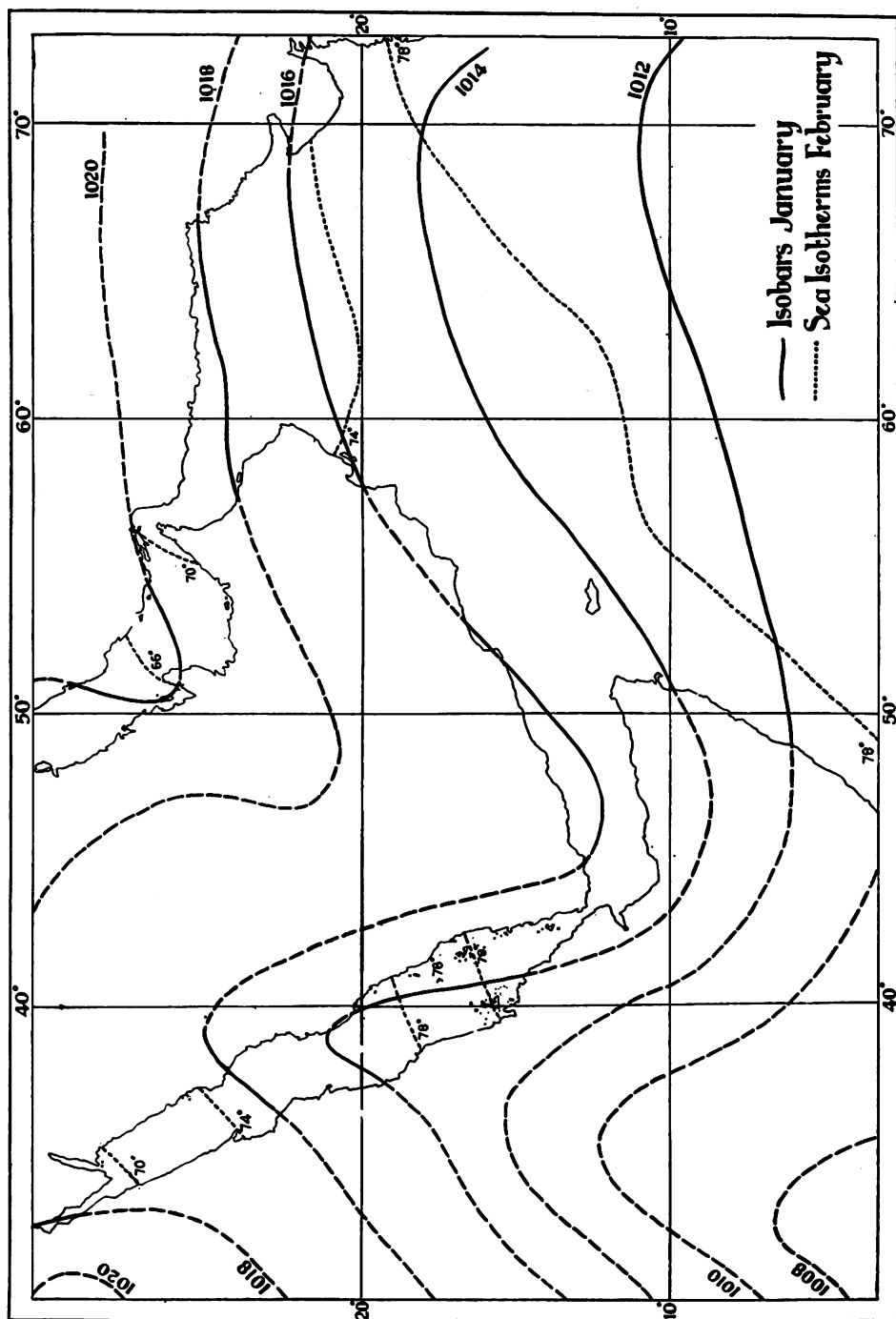


FIG.1.

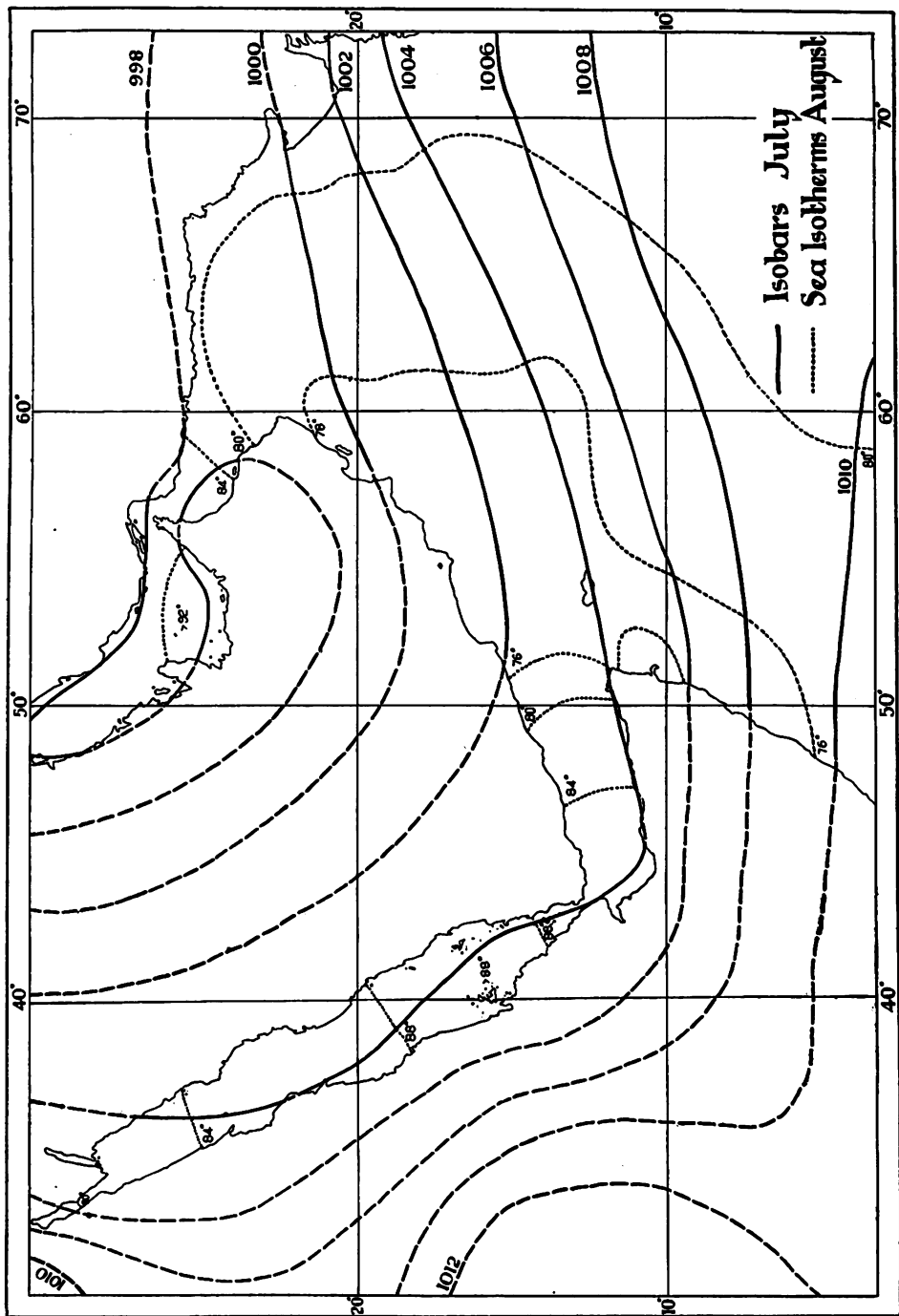


FIG.2.

The northern part of the Red sea is practically rainless and elsewhere rainfall is scanty so that drinking water is scarce over the whole region. The greatest part of the rainfall falls on from 5 to 10 days in the winter months, November to March, but it is exceedingly variable and a whole year may pass without rain. The rare rainstorms are frequently very heavy and nearly the whole year's rain may come in a single storm lasting a few hours and yielding several inches; these storms are generally accompanied by thunder, and sometimes in the northern part, but not in the central or southern part, of the Red sea area, by hail.

Pressure.—The average distribution of pressure undergoes a seasonal change, due to the alternation of high and low pressure over Asia and the movement northward or southward of the low-pressure system of Central Africa.

Figure 1, facing page 30, shows the average pressure conditions in January, the typical month of the north-east monsoon season. An extension of the Asiatic anti-cyclone is centred over the interior of Arabia, whilst another area of high pressure lies over the Sahara. Pressure decreases gradually southward towards Central Africa and the Arabian sea, but an important local irregularity occurs over the Red sea where pressure is appreciably lower than over the surrounding land.

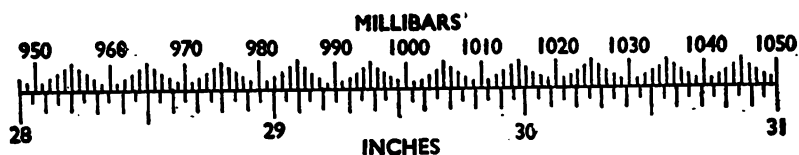
Conditions in July, characteristic month of the south-west monsoon, are shown in Figure 2, facing this page. Pressure decreases eastward and northward towards the Asiatic low-pressure system situated over North-west India and Persia.

In general, average pressure falls gradually from January to July and rises from July to January. Monthly values for ports are given in the meteorological tables, pages 48-62.

Diurnal variation of pressure increases from north to south. In the northern part of the Red sea, the average daily range is 2.1 mb.; it is greatest in March (2.3 mb.), and least in September (2.0 mb.). The maximum occurs at 1000 local time; the minimum varies between 1500 in winter and 1700 in summer. A secondary maximum, not nearly so marked as the morning maximum, occurs about 2100 or 2200.

In the southern part of the Red sea and in the Gulf of Aden the daily range may average as much as 3.9 mb. over the year; it is greatest in August (4.7 mb.), and least in December (3.4 mb.).

The following diagram gives the equivalent in millibars of inches of mercury and *vice versa*.



Cyclonic disturbances.—*Western depressions.*—From October to April the weather of the Red sea northward of about lat. 25° N. may be influenced by the passage of depressions moving from the Mediterranean towards the Persian gulf. The average frequency of these disturbances is from one to two a month. Associated cold fronts moving southward from lower Egypt are accompanied by north-westerly winds which may reach gale force and may cause heavy rain as far southward as Port Sudan. Shallow depressions travelling east-

ward may be responsible for either westerly gales and, at times, dense dust fogs, or, for south-westerly or "Khamsein" gales, which bring dry air, haze, fine dust or sandstorms. Damp southerly or south-westerly gales are associated with deep depressions over the southern Mediterranean.

Tropical cyclones.—For a full description of the cyclones of the Arabian sea, see West Coast of India Pilot.

Tropical cyclones have not been reported in the Red sea; they are rare in the Gulf of Aden, where only three, or possibly four, storms have occurred in the past 50 years. Information regarding the south-eastern coast of Arabia is meagre, but the probability is that one such storm is experienced once every 4 or 5 years, especially in the region of the Kuria Muria islands.

Tropical cyclones are most likely to be encountered in May to June and October to November. Though rare in the Gulf of Aden, they are more dangerous in these seas owing to the difficulty of forecasting their approach with any degree of certainty; the usual signs of approaching bad weather should always receive attention, especially at the change of the monsoons.

An example of the rare instance of a cyclone passing westward from the Arabian sea into and along the centre of the gulf is given below.

Between 1st and 3rd June, 1885, an intense cyclone passed westward through the Gulf of Aden. Its centre passed northward of Socotra about noon on the 1st, being met by a vessel about 50 miles north-westward of that island at 2000. It appears then to have kept in about the middle of the gulf, passing some 50 miles southward of Aden about 1500 on the 3rd June, and southward of Obock about 2000; the rate of progress of the cyclone from Capo Guardafui was about 9 knots. The winds were north-easterly to easterly in the northern portion of the gulf, and at Aden, between noon and 1500, the velocity was from 78 to 43 knots; $2\frac{1}{4}$ inches of rain fell on that day. At Obock the wind was unsteady on the 3rd, becoming easterly about 1600, with continuous rain, shifting to southerly at 2100, and then to south-westerly; on the 4th the cyclone passed westward out of observation. Many vessels were lost, including one that foundered near Aden.

This cyclone was preceded by much lightning eastward, a halo round the moon, a threatening appearance of the sky, north-north-westerly to north-north-easterly squalls, a barometrical fall of about one to 3 millibars, and a swell from eastward; these signs were observed by vessels about twelve hours before the cyclone was felt. At Aden the barometer gave little or no warning, but an unusual swell set into the bay. Near Perim these threatening appearances, with uneasiness among the sea birds, but with no barometrical disturbance, were observed on the 1st June, nearly two days before the cyclone reached that locality.

More recently, at the end of November, 1922, a cyclone which travelled over the Indian peninsula and crossed the Arabian sea in a west-north-westerly direction in lat. $10-12^{\circ}$ N. passed north of Socotra on December 6th. Vessels northward of the centre experienced high confused seas with heavy rain squalls. This storm probably crossed the Arabian coast in long. 48° E.

Details of the signs of approach of tropical storms and rules for manœuvring if caught in one are given on pages xxxii-xxxiv of the section on "General Navigation."

For the effect of a tropical revolving storm on the current, see page 18.

Winds.—The prevailing winds blow parallel with the coasts.

It is convenient to divide the areas into the following sections :—

1. *Northern part of the Red sea.*—Northward of lat. 18° N. winds are mainly north-north-westerly throughout the year in the central and eastern parts of this area ; in the western part of the sea these winds are predominant from about lat. 16° N. In the Gulf of 'Aqaba the stronger winds, following the shores, blow from a point slightly eastward of north. 10

During the months October to April some winds blow from a southerly direction ; during the remainder of the year these winds are almost unknown.

2. *Southern part of the Red sea.*—There is an annual reversal of wind direction. From October to April, southward of lat. 18° N., the predominant winds are south-south-easterly ; northerly winds are only occasionally experienced. In May the winds change to north-north-westerly, and blow from this quarter until late September. 15

In the winter months, between the north-north-westerly winds of the northern part of the Red sea and the south-south-easterly winds of the southern part there is an area where pressure is low ; here calms and light airs prevail. This area changes in extent and position ; in May it moves gradually southward giving a period of transition from south-south-easterly to north-north-westerly winds as it passes. 20

3. *The Gulf of Aden.*—The winds of the Gulf of Aden and the southern coast of Arabia form part of the monsoon circulation of Asia. Over the open Arabian sea, the north-east monsoon, fully established in December, continues until the end of March. April and May are months of transition when the north-easterly winds, losing persistency, give way to the south-west monsoon which prevails from June until September. 25 October and November are transition months. In the Gulf of Aden the predominant winds are east-north-easterly from October to April, but become south-easterly in the Straits of Bāb-al-Mandab. In May winds are variable, but from June to September steady westerly winds prevail, blowing strongly at times through the length of the gulf eastward past Socotra to the open ocean. 30 35

4. *Arabian sea, westward of lat. 60° E.*—From November to February the north-east monsoon prevails as a steady moderate north-easterly breeze, with fine, clear settled weather and a smooth sea. In March winds become lighter and more variable ; by mid-April the greater proportion are from a southerly point, except in the eastern part where they are north-westerly. 40

Light south-westerly winds predominate in May. The south-west monsoon does not set in strongly until June, when steady south-westerly winds prevail over the whole area. Gales are frequent from June to August. The winds become lighter in September, and by October are light and variable with frequent calms. Towards the end of the month north-easterly winds prevail. 45

Gales.—Gales with a duration of as much as 24 hours are practically confined to the direction of the prevailing wind, although the southerly to westerly gales of the northern part of the Red sea form exceptions to this rule. Other winds of gale force are usually of short duration and are either cold front squalls, offshore squalls, or squalls associated with sandstorms or thunderstorms. 50

The table below gives the odds against one of encountering a gale force 8 or more for each month of the year. 55

Lat. N.	Long. E.	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
25-30°	30-35°	100	*	100	100	50	100	100	33	*	*	*	33
25-30°	35-40°	100	*	—	—	—	—	*	100	—	*	*	—
20-25°	35-40°	*	50	100	100	100	*	*	*	—	*	*	*
15-20°	35-40°	*	100	*	*	*	*	*	*	*	*	*	*
15-20°	40-45°	*	50	100	—	—	*	*	100	*	*	*	50
10-15°	40-45°	25	—	33	50	100	*	*	*	*	*	100	25
10-15°	45-50°	50	50	—	*	*	100	20	50	—	*	*	*
10-15°	50-55°	—	—	—	—	*	9	7	10	50	*	*	—
10-15°	55-60°	—	—	—	—	*	6	4	6	*	—	—	*
15-20°	50-55°	—	—	100	—	—	—	50	16	—	—	—	—
15-20°	55-60°	—	—	—	—	—	33	12	12	—	—	*	—

* Indicates odds greater than 100 to 1.

During the months October to April, gales in the Red sea are most often north-westerly or northerly in the northern part of the sea, and southerly or south-easterly in the southern part. North-westerly gales are most frequent in December (about one each year), but they may also occur between February and April. These gales occur when the low-pressure trough over the Red sea is accentuated by a depression moving eastward over the Mediterranean. As far southward as about lat. 21° N. there is about one north-westerly gale in four years in each of the months October, December and March.

The southerly and south-easterly gales of the southern part of the Red sea are usually met with between lat. 16° N. and the Straits of Bāb-al-Mandab. At about lat. 15° N. these gales occur on the average only once every three years in October and April, twice a year in each of the months November, December and January, twice or three times a year in February, and once in one or two years in March.

Occasionally moderate southerly gales are met with between Suez and Jidda between December and March, they bring damp weather and are associated with a widespread fall of pressure.

In the Gulf of Aden gales are rare during the north-east monsoon season except occasionally in the Bāb-al-Mandab region. They are, however, very frequent during the south-west monsoon season especially near the eastern entrance to the gulf. Between longs. 55° and 57° E., eastward of Socotra, the odds against the occurrence of a gale are as little as 4 to 1 in July, and about 6 to 1 in June and August. Over the Red sea gales are exceedingly rare during the south-west monsoon season.

"Khamsin" gales occur in the northern part of the Red sea, in the Gulf of Suez, and as far southward as 22° N., caused by shallow depressions in Egypt and the Sudan, they are usually short-lived. The sequence of weather is somewhat as follows:—at first winds are light southerly or easterly, whilst cirrus cloud spreads across the sky from westward or south-westward. The southerly wind then strengthens, sometimes to gale force, veering south-westward or westward. A sandstorm may now set in, and may continue until there is a sudden veer with a squall from the north-west. The wind remains in this quarter and slackens to fresh as the air clears. The southerly "Khamsins" are dry, although there may be a slight shower with the veer north-westward. The frequency of "Khamsins" is probably similar to that of Egypt, and is therefore as follows:—February six, March seven, April seven, May five, June two.

Squalls.—Offshore squalls are often experienced near mountainous coasts, cold-front squalls, and thunder squalls are all met with at times. Cold-front squalls are especially associated with the extreme northern part of the Red sea in the Gulfs of Suez and 'Aqaba. They may reach

gale force for a short time and are sometimes accompanied by thunder and heavy rain.

Offshore squalls should be expected near all mountainous coasts throughout the region. They are short-lived and are most likely to occur in the late afternoon or evening. 5

Thunder squalls are prominent in that belt of the Red sea between lat. 19° and 22° N. in the north-east monsoon. They may occur from any direction and the wind may reach force 10 of the Beaufort scale. Heavy rain may also fall, reducing visibility to about 100 yards. Such storms may be distributed over a wide area, setting in at any time of day or night. 10

On the south-eastern coast of Arabia, especially between Ras Sājir and Masīra, strong north-north-westerly winds from off the land sometimes blow during the north-east monsoon season between mid-December and mid-March. They blow very strongly in Kuria Muria bay. 15

Usually setting in between midnight and 0400 as a light breeze the "Belat," as it is sometimes called, may increase to a moderate gale in about an hour, and ceases suddenly about noon. It sometimes blows in this manner for several days on end. The air is always hazy with this wind and sometimes it may be associated with a dense sandstorm. The onset is marked by a faint hazy arch over the land on the previous evening, or by the wind shifting towards a landward direction, sometimes in sudden gusts, early in the night. 20

Kharif.—The "Kharif" is a strong south-westerly wind which blows on the African shore of the Gulf of Aden from June to August. It is felt at Berbera and probably for some distance eastward along the coast. The average force is 3 to 5 on the Beaufort scale, decreasing seaward, but it sometimes blows as a fresh breeze 30 miles offshore. The "Kharif" usually blows at night, setting in rather suddenly about 2100, and reaching its maximum strength at 0900; it is normally replaced by the sea breeze during the afternoon, but it may, at times, blow without ceasing for from three to four days. A dry wind, the "Kharif" brings great heat and generally raises great quantities of sand. 35

Similar hot, dry sand-laden winds, but blowing from between north-west and north-east, are sometimes experienced along the southern coast of Arabia, in the Bāb-al-Mandab area, and in French Somaliland. They are usually preceded by a failing of the monsoon, after which the wind comes suddenly and sometimes violently from northward. It usually continues for from 3 to 4 hours and occasionally comes on again from eastward. These winds are most likely to occur between May and September, only blowing with great strength about three or four times a year. 40

Land and sea breezes.—Near the coast the wind is affected by land and sea breezes. These breezes are caused by the unequal heating, and cooling by radiation, of the land and sea. During the daytime the land is warmer than the sea and a sea breeze tends to blow on shore; at night the land is cooler than the sea and there is a tendency for an offshore "land breeze." The conditions most favourable to the development of land and sea breezes are fine weather and a weak prevailing wind. Thus these breezes are best developed on coasts which are sheltered by high land; on such coasts they are the prevailing winds. On exposed coasts the sea breeze reinforces the prevailing wind during the daytime; the land breeze may be sufficiently developed to produce a calm at night or may even over-ride the prevailing wind; this is unlikely unless there 55

is high land near the coast or the prevailing wind is very weak. On coasts where the prevailing wind blows along-shore, the breezes deflect it. The sea breeze is usually stronger than the land breeze except on coasts which are backed by high land. The strength of the breezes and
 5 the time of their onset varies along the coast and with the weather, depending largely on the direction of the prevailing wind with reference to the coast-line. On sheltered coasts the sea breeze usually sets in between 1000 and noon and is strongest in the early part of the afternoon; the land breeze usually sets in before midnight and lasts until
 10 about 0900. Particulars of time of onset and period of greatest strength will be given, where possible, in "Local weather."

Sea temperature.—Sea surface isotherms for February and August are shown in Figs. 1 and 2, facing pages 30 and 31.

Lowest values of sea surface temperature occur in February. The
 15 coolest part of the region is the extreme north of the Red sea, where the average temperature is between 65° and 70° . A gradual increase occurs southward to the central area of the southern part of the Red sea where the average is about 78° . Southward and eastward through Bāb-al-Mandab and along the Arabian coast there is a decrease to 72° at Ras al
 20 Hadd.

In summer, the month of the highest average, sea temperature varies; in the northern part of the Red sea it is August, with 80° in the Gulf of Suez, rising to 87° at lat. 20° N. The hottest part of the whole sea area included in this volume is in the region of lat. 15° N. in the Red sea
 25 where a mean temperature of over 90° is found in September, whilst from June to August it is above 88° . There is a rapid fall in temperature from the Red sea to the Gulf of Aden amounting on the average to 4° .

In the south-west monsoon, sudden and often large changes of sea
 30 surface temperature occur in the region of Bāb-al-Mandab, and also between the Straits of Bāb-al-Mandab and Aden. Change of air temperature may be noted at the same time. Observations made in recent years show that temperature changes of from 16° to 24° are not uncommon in or near the Straits of Bāb-al-Mandab, the normal high
 35 temperature being found in the Red sea, immediately northward, and also in the Gulf of Aden on these occasions. At other times the cold water area extends into the gulf off the Arabian shore to a point south-westward or southward of Aden. The greatest recorded fall is 34° from 91° to 57° , between Aden and the Straits of Bāb-al-Mandab, the
 40 temperature northward of the straits rising again to 91° . A fall in the temperature has also been observed off the Arabian coast much further eastward, between Ras Qusaīyir and Ras al Kalb.

The probable explanation is that the south-west monsoon draws away some of the surface water of the Gulf of Aden, which is replaced by
 45 upwelling of sub-surface water. From Perim to eastward of Aden the depths decrease gradually over a wide area to the shore; upwelling water would pass up this slope and come to the surface inshore.

During the south-west monsoon patches of relatively cool water, due also to upwelling, are found off the African coast southward of Capo
 50 Guardafui, particularly in the immediate neighbourhood of Ras Hafun. Sea temperatures of between 60° and 75° may thus occur, while close northward of Capo Guardafui, temperatures average from 81° to 83° in this season.

Visibility.—Fog, i.e., visibility less than 1,100 yards, is rare at sea
 55 in the area covered by this volume, except in the region of Socotra where fog may occur in the south-west monsoon season. Mist is also

not very common; the chances of its occurrence being more than 100 to 1 against in all seasons in the Red sea and within the Gulf of Aden. Mist is, however, reported during the south-west monsoon in the Arabian sea, off the south-eastern Arabian coast between lats. 14° and 20° N., and also eastward of Capo Guardafui to about long. 55° E. 5

Sand or dust haze is widespread in June, July, and August throughout the day. From a large number of ships' observations taken at Greenwich noon, haze is present on one occasion in 10 in the northern part of the Red sea, and on one occasion in 4 in the section between Port Sudan and Bāb-al-Mandab. On the African side of the Gulf of Aden and east of Capo Guardafui haze may be expected on one occasion in 5. Eastward and northward of lat. 14° N. there is an increase in haziness towards the Arabian coast, where it is observed on one occasion in 2. This region includes the region of mistiness mentioned in the paragraph above. 10 15

In September visibility improves, and in the months of September to November haze occurs on about one occasion in 20. From December to February haze is not usual, but from March onwards visibility decreases until summer conditions are established.

Mirage and abnormal refraction are frequent in the Red sea and also in the Gulf of Aden. Elevation of the horizon is due to a rapid decrease of air density with height, caused by the cooling of warm air in its lower layers by the sea. Depression of the horizon also occurs, due to intense surface heating of beaches, shoals, rocks, &c. See "Refraction," page 12. 20 25

Waterspouts.—Waterspouts may occur at any time of year. They are said to be fairly frequent in the southern part of the Red sea in association with thunder squalls, but are less common in the Gulf of Aden.

Sand-devils are whirls of sand and are similar to waterspouts over the sea. In fact waterspouts have been seen to change into sand-devils on reaching the shore. 30

Local weather.—**Gulfs of Suez and 'Aqaba.**—**Red sea, northward of lat. 18° N.**—**Winds.**—Northerly winds prevail throughout the year; during the summer there is scarcely a lull over the sea. In the Gulf of Suez the wind is generally lighter near the western shore, especially near high land. In winter variable winds, mostly southerly, may be experienced due to the passage of depressions northward. At this season, throughout the Red sea, northerly winds are generally accompanied by dry, and southerly winds by damp weather. Thus an increase in relative humidity often indicates a change of wind some hours before it takes place, and before there is any other sign. The chances of meeting a southerly wind are about one in 10 from December to February, whilst from June to August the chances decrease to one in 20 or more. 40 45

In the Gulf of 'Aqaba north-north-easterly winds, which sometimes blow with considerable force, prevail during the greater part of the year, but in April and May they are generally moderate, and there is stated to be an occasional change to southerly winds. Southerly winds may also occur in winter, coming on suddenly, and blowing for some hours or even for a day. 50

Over the sea the mean wind force is 4 on the Beaufort scale in all seasons. From October to April about two-thirds of the winds observed are less than force 4. From May to September the proportion of light winds is one-half between lats. 25° and 30° N., and two-thirds between lats 20° and 25° N. 55

The chances of meeting a gale of force 8 or more are one in 30 in December and August in the Gulf of Suez, and one in 50 in February between lats. 20° and 25° N. In other months the chances are one in 100 or less. Gales are nearly always from a north-westerly or westerly point, but in the transition zone, lat. 18° to 20° N., south-easterly gales have been occasionally reported in February. Between lat. 20° and 22° N. north-easterly gales have been reported in April.

Squalls, not necessarily of gale force, occur in both the Gulfs of Suez and 'Aqaba, in the Strait of Gûbal and on both the African and Arabian coasts. At Port Sudan, squalls are usually from between south-east and west, if from the latter point they often carry sand, and are known locally as "haboobs." Similar sharp storms from off the land are experienced at Suâkin. When these squalls occur on the African coast there is usually thick hazy weather on the coast of Arabia. On the Arabian shore near Jidda, there are strong squalls from north-eastward, particularly in April and May.

Near the coasts, land and sea breezes are to be expected when the prevailing winds are weak. The sea breeze often appears in a slight freshening of the north-westerly wind during the day. At night the wind tends to blow more from landward and may, in places, slacken to a calm. In March and April land and sea breezes are stated to be more frequent on the eastern side of the Red sea than on the western side.

Temperature.—Humidity.—Mean and extreme values of temperature are given in the meteorological tables, *see* pages 48–51 and 54–56. January is the coolest month with an average temperature of 57° at Suez. By day temperature averages 68°, whilst at night it falls to 49°. Extreme minimum temperatures do not fall below 40°. December and February are almost equally cool. Southward, temperature rises gradually and the coolest month is generally February. In the region of Port Sudan the lowest mean temperature (73°) occurs in this month. Day temperature averages 81°, which is considerably higher than that experienced further northward, and the night temperature is about 20° higher.

In March and April the temperature rises rapidly. From June to September the mean temperature is above 80° in the northern part of the Red sea, gradually increasing to about 90° in the southern part. Summer heat usually reaches its greatest intensity in July and August. At Suez day temperatures average 97° and night temperatures 74°. On the shores of the Red sea the heat of the day is somewhat less, and the maximum temperature does not usually rise above 95°. The night temperature is not so low as in the Gulf of Suez and averages 80° to 82°.

Conditions become increasingly torrid towards 20° N. Temperature may rise by day to 105° or more. The highest recorded temperatures are in the region of 117° and occur on the west coast more frequently than the east.

The air is relatively dry throughout the year over the Gulfs of Suez and 'Aqaba; the mean humidity remains in the neighbourhood of 70 per cent. at Suez. It is highest from October to January, and lowest from May to July. Diurnal variation is greater in the latter season when it averages from 30 to 35 per cent.

Humidity in the Red sea is relatively low in winter, especially from December to February. Over the sea the mean humidity varies between 73 per cent. in January to 80 per cent. in June. On land the west coast tends to be less humid than the east. Thus at Jidda the July mean is 67 per cent., whilst at Port Sudan it is 47 per cent. only.

Cloud.—There is very little cloud at any time of year. From October to March the mean amount is from $\frac{1}{10}$ to $\frac{2}{10}$; during the summer half year it is from $\frac{1}{10}$ to $\frac{2}{10}$ or even less. From lat. 20° N. southward there is an increase, there being from $\frac{1}{10}$ to $\frac{2}{10}$ between November and February at Suākin, and from $\frac{1}{10}$ to $\frac{2}{10}$ at Jidda. More cloud also appears in this region in August with from $\frac{1}{10}$ to $\frac{2}{10}$. 5

Precipitation.—Southward from the Gulfs of Suez and 'Aqaba to about lat 22° N. rain rarely falls. In the gulfs some precipitation occurs in winter, but the amount is very small and does not exceed one inch a year on the average. Rain is likely to fall in short showers in squalls or sandstorms; prolonged drizzle is rare. The number of days with appreciable precipitation (0.04 in. or more) is less than one a month. The summer months are usually completely dry. 10

Southward of 22° N. there is an increase of rainfall on both coasts, amounting to from 3 to 4 in. a year on the average. Most of the precipitation occurs between October and January. Appreciable rain falls on from 2 to 5 days a month during this period. 15

Visibility.—Fog is rare and is probably confined to the early morning hours. Along the coasts the annual number of fogs is not likely to exceed two a year. They generally occur in winter. 20

Visibility is, on the other hand, often reduced by haze, or by "Kham-sin" sandstorms which may give dense dust fog from Suez to Daedalus reef.

From observations taken at sea at about 1500 in December, February, May, July, and October, it appears that visibility is most likely to be restricted by haze in early summer, when the chances of this are about 1 in 8. In July the probability is reduced to 1 in 12, except between 20° and 25° N. where it remains 1 in 8. December is the clearest month as the odds are 24 to 1 against the occurrence of haze northward of 25° N. and over 30 to 1 between 20° and 25° N. 30

Local weather.—Red sea, southward of lat. 18° N.—**Straits of Bāb-al-Mandab.**—**Winds.**—South-south-easterly to south-easterly winds prevail from October to April, after which winds tend to be variable until June, when north-westerly winds become predominant until the end of August. In September southerly winds again become numerous. 35

From October to April the south-easterly winds blow more strongly than the north-westerlies of the northern part of the Red sea. The mean force of the wind over the sea is from 4 to 5 on the Beaufort scale between December and February. Near the straits the mean force may increase to as much as force 6 in the latter month. 40

North-westerly winds are not however unknown. A case is recorded of the sudden displacement of the prevailing winds by strong north-north-westerly winds just northward of the Straits of Bāb-al-Mandab. These north-north-westerly winds continued to blow for 3 days between the Straits of Bāb-al-Mandab and Kamarān island. 45

The odds against the occurrence of a gale of force 8 or more are least near the Straits of Bāb-al-Mandab with 25 to 1 in December and January, and 33 and 50 to 1 in March and April, respectively. Northward of lat. 15° N. gales are rare. In the western part of the Red sea the chances of encountering one are less than 1 in 100. Gales appear to be slightly more frequent near the Arabian side of the sea where the odds against occurrence are 50 to 1 in December and February. Occasionally squalls and changes of wind similar to those of cold front type northward are experienced between October and April. 50

May is a transition month. Over the sea north-westerly winds are 55

about twice as frequent as south-easterly ones, and blow on about one day in 3. Near the straits, however, south-easterly winds still predominate though with less persistency.

In the region of lat. 15° N. and northward winds are light and variable near the coasts and land and sea breezes are well marked.

From June to August, winds over the sea are mainly north-westerly, but only reach a force of from 4 to 7 on about one occasion in four. Winds from other directions are recorded but are light. Gales of force 8 or more are rare, occurring once every 3 years in June from north-westward or north-north-westward in the region of lat. 17° N. In lat 15° N. winds are even lighter; a gale from northward may be met with about once in 8 years in August.

Near the Arabian coast, at Kamarān island, north-westerly to westerly winds prevail until September, increasing in strength in June and July, and falling off again in August and September.

Land and sea breezes are well developed throughout the region during these months although should the prevailing winds be strong as at Kamarān, they may be felt only as a slight change in the direction of the wind, and in an increase or decrease in the force of the wind according to the lie of the coast. When the north-north-westerly wind blows directly on the land, the day wind appears as a strong sea breeze.

Squalls from off the land are experienced at this season, and are often associated with hazy weather. Such squalls are said to be frequent at Hudaida in the evenings of August and September.

Sandstorms, occasionally involving a strengthening of the wind to gale force, occur chiefly in the region of lat. 15° N. They are usually from a north-westerly direction, taking the form of widespread clouds of dust and sand which originate in the violent sandstorms or "haboobs" of the Sudan. These storms, as they die out, drift seaward.

Temperature.—Humidity.—Mean and extreme values of temperature and of relative humidity are given, twice daily where possible, in the meteorological tables, *see* pages 52 and 57.

This section of the Red sea is one of the hottest regions in the world, and is notorious for its sultry and enervating heat during the summer. While air temperature over the sea rarely rises above 100° , temperatures below 60° are unknown; often the nights fail to give relief from the heat of the day. A short distance inland, however, the range of temperature is likely to be greater, and care should be taken to guard against night chills, as well as exposure to the sun by day.

The coolest months are December to February. January shows the lowest mean temperature, varying between 73° in lat. 18° N. and 79° in the straits. Maximum day temperatures average from 82° to 85° , and night temperatures from 72° to 74° . The lowest recorded temperature is 60° at Perim.

Temperature rises rapidly after April; June to September are the hottest months of the year. The heat is most intense in the Massaua region in July, when temperature rises by day to an average of 103° , and falls only to 88° at night. The highest recorded temperature is 116° . Massaua is especially hot because winds are light by day and very often drop to calm at night. Baia di Archico, close southward of Massaua, is more subject to land and sea breezes, and thus may be quite pleasant, whilst Massaua is suffering from stifling heat. Similar local differences are probably found elsewhere.

On the Arabian shore the heat is a little less intense.

After September, temperatures fall gradually.

Cloud.—This part of the Red sea is somewhat cloudier than that northward of lat. 18° N. The average amount is greatest during the north-east monsoon season, with from $\frac{1}{10}$ to $\frac{2}{10}$ of the sky covered during the months of January to March. May is usually the clearest month, after which skies become slightly cloudier with from $\frac{1}{10}$ to $\frac{2}{10}$ covered in July and August. In September and October skies are again clearer. 5

Precipitation.—Southward to Massaua precipitation increases to about 7 inches a year; still further southward there is a decrease to 3 inches at Kamarân and Perim. Near Massaua the rains last from October to March, with a maximum fall of 2 inches a month in December and January. The months April to September are dry, except for a few scattered showers in July and August. On the Arabian coast, for example at Kamarân and Perim, most of the annual fall occurs between November and February, and amounts to less than half an inch a month on the average. Precipitation everywhere is irregular; any month of the rainy season may be wholly dry. Rain, when it does fall, is in the form of short showers, sometimes heavy. 10

Visibility.—Poor visibility may occasionally be caused by early morning mist, but fog is probably extremely rare and is not likely to occur on more than one or two mornings a year, and is said to be unknown at Kamarân. The usual cause of restricted visibility is haze. At Kamarân the most hazy period is from May to August. Sand-haze, reducing visibility to below 2 miles, may be present about once a month in June and August, and twice a month in July. Should still vigorous sandstorms travel seaward, visibility may be brought down to nil. At Perim during the summer north-westerly winds bring fine dust which forms a cloud bank obscuring the sun from about an hour before sunset. 15 30

Heat haze, due to the suspension of salt particles in the air, occurs during the hot months of August and September, with light winds or calms, and is often increased by the onset of winds from southward.

Visibility below 1,000 yards (914^m4) is occasionally experienced with torrential rain during a thunder squall. 35

Local weather.—**Gulf of Aden.**—**Arabian coast.**—**Bâb-al-Mandab to Ras al Hadd.**—**Winds.**—*North-east monsoon.*—*December to March.*—Over the sea in the Gulf of Aden easterly to north-easterly winds blow steadily with a force of from 2 to 3 on the Beaufort scale. In the Straits of Bâb-al-Mandab they are stronger, with a force of about 4. Eastward, over the Arabian sea, the north-east monsoon has a force of from 3 to 4. 40

The north-east monsoon blows along the coast, but some diurnal change in the strength and direction usually occurs due to land and sea breezes deflecting the monsoon. At Ras al Hadd, light or moderate northerly winds blow in the afternoon; they may persist through the night, but more often the wind is then south-westerly and light. Between Masîra and Ras Sâjir a strong land wind sometimes occurs and stormy and variable winds both from land and sea may be met in Kuria Muria bay. In some places, such as Salâla, Riyan, and Aden, there are land and sea breezes throughout the season. At Salâla, which is well sheltered, a sea breeze from south-eastward or southward, may set in as early as 1000, but at Riyan it is not established until the afternoon. 45 50

Transition season.—*April to May.*—From about the middle of March the north-easterly winds become lighter and in mid-April light southerly 55

winds set in along the Arabian coast ; by May south-westerly winds prevail over the open sea. Within the Gulf of Aden in April winds remain similar to those of the north-east monsoon but are lighter. In May calms are frequent and the winds which, in general, are still from some easterly point, are very light. Gales are rare although squalls are not unknown.

Land and sea breezes are prevalent along the coasts. The sea breeze especially is stronger than during the north-east monsoon season.

South-west monsoon.—June to September.—Moderate to strong south-westerly winds prevail over the open sea ; they are particularly strong between Socotra and lat. 16° to 18° N., long. 60° E., where they blow with force 6 or 7 in July and August, and exceed force 8 in frequent squalls. At the eastern entrance to the Gulf of Aden winds are still strong ; gales of force 8 or more occur on about 11 days in July. Within the gulf, winds are between south and west and are less steady than those of the north-east monsoon. The wind freshens to gale force on less than one day a month. In September light variable winds increase in frequency.

On the coast from Ras Qusaīyir to Ras al Hadd, the south-west monsoon begins in May, sometimes with heavy squalls, thunderstorms and rain. The wind is strongest and the seas are heaviest between Ras Marbāt and Masīra. The north-westerly winds of the Straits of Bāb-al-Mandab and the southern part of the Red sea sometimes enable a sailing vessel bound eastward to reach the monsoon in the Arabian sea. Generally, however, the wind fails westward of Ras Rujaima, and is not met again until reaching the region of the southerly wind, which blows through and northward of the channel between Capo Guardafui and Socotra. As the wind blows strongly almost parallel with the coast land and sea breezes are not likely to be well marked. Within the gulf, where the monsoon is less strong, land and sea breezes are stronger. Winds are either variable, light, or south-easterly at night, veering in the afternoon.

Transition season.—October to November.—Winds over the sea are light and variable in October. The north-east monsoon sets in off the south-eastern coast of Arabia about the middle of the month and by November is well-established. At the entrance to the Gulf of Aden, winds in October are light, chiefly from north-east and east. Towards mid-November they strengthen and blow steadily from north-eastward. The transition is similar within the gulf, but westward in the Straits of Bāb-al-Mandab the direction of the wind changes to south-eastward or southward, and the force is light to moderate.

Off the coasts, especially in October, land and sea breezes are prevalent. The direction of the sea breeze is usually from between south and south-south-east. There are frequent calms. Southward and westward of Masīra land breezes are rare in November.

Temperature.—Humidity.—Mean and extreme values of temperature and values of humidity are given in the meteorological tables, page 53 and pages 58–60.

On this coast the transition month of May and the first month of the south-west monsoon are usually the hottest of the year. Temperatures rise by day from 90° to 95° and fall to from 78° to 84° by night in June. Extreme temperatures are probably between 105° and 110° .

November to February or March is the cool season. Average night temperatures vary between 65° and 73° , whilst day temperatures are between about 80° and 85° .

Little information is available regarding relative humidity. At

Aden it is highest from December to March, and lowest in June, October, and November. The air is most humid at about 0600 and least so in the afternoon. Eastward of Aden the air becomes progressively drier but remains enervating owing to the great heat. It is most humid during the south-west monsoon.

Average wet-bulb temperature exceeds 75° on the shores of the Gulf of Aden between April and October. Eastward to Ras al Hadd this occurs only in May and June.

Cloud.—The cloudiest skies occur in the two monsoon seasons. Over the sea the sky is rarely on the average, more than $\frac{1}{10}$ covered. July is the cloudiest month in the Gulf of Aden and over the Arabian sea northward of 15° N. October is the clearest month in the gulf with an average of less than $\frac{1}{10}$ cloud; March is the clearest month over the Arabian sea. Along the coast the cloudiest region is that stretching from Ras Fartak to Masīra. Here the mean amount of cloud in July and August is nearly $\frac{1}{10}$, decreasing westward and eastward from Salāla to from $\frac{1}{10}$ to $\frac{1}{10}$ at Riyan and Masīra. Salāla is apparently the centre of the cloudy area, with an almost continuously overcast sky, but both westward and eastward the cloud usually clears by the afternoon. During the remainder of the year the cloud amount is small, varying from $\frac{1}{10}$ to $\frac{1}{10}$.

The Arabian shores of the gulf are cloudiest during the north-east monsoon. At Aden the average cloud is from $\frac{1}{10}$ to $\frac{1}{10}$ from January to March whilst in the south-west monsoon it decreases to $\frac{1}{10}$. The clearest skies are those of October and November with an average of $\frac{1}{10}$.

In general there is most cloud between 0800 and 0900 and least during the afternoon.

Precipitation.—There is but little precipitation in this area except on the Dhūfar plain and in the Gulf of Aden, but the dews are heavy; the mean annual amount at Aden is only 2 inches. Eastward from Ras Fartak most of the precipitation occurs during the south-west monsoon whilst westward from that cape rain is more likely in the north-east monsoon season. Precipitation is, however, so spasmodic that no season can be called rainy. In the mountains inland rainfall is probably greater and falls in violent local thunderstorms. Drizzle is probably prevalent during the south-west monsoon near Salāla.

Visibility.—*North-east monsoon.*—*December to March.*—Fog is practically unknown over the sea and mist and haze are rare. On the coast eastward of 50° E. visibility is probably reduced occasionally by sand or dust storms. Fog is stated to be frequent in the Gulf of Masīra. Westward of long. 50° E. poor visibility is rare. Fog does not occur at Aden.

April to May.—Visibility over the sea is less good, haze occurring in the Gulf of Aden on one occasion in 15. A similar deterioration occurs near the coasts especially between Salāla and Masīra.

South-west monsoon.—*June to September.*—Visibility is generally not good, especially near the coasts where mist or haze is reported in more than one-fifth of the observations from June to August. At Masīra, the chances of meeting visibility less than 5 miles are one in 3 in June, one in 2 in July and August, and one in 4 in September. At Ras al Hadd the chances are about one in 4 from June to August and one in 10 in September. Conditions are worst at midday, and fog covering a wide area has been encountered on this coast. At Salāla visibility below half a mile is said to be frequent in the mornings and to improve slightly in the afternoon. In July and August visibility less than 2 miles occurs

on one day in 2. Westward at Riyan conditions are better, for though haze is frequent in June and July visibility below 2 miles is very rare.

Within the Gulf of Aden the atmosphere is thick and hazy, though there are occasional clear days. July is the worst month, with mist or haze reported on one occasion in 3. At Aden visibility falls below 2 miles on about 2 days a month from June to August.

Sandstorms, which may occur in any month but mostly between May and September, reduce visibility to 50 yards or less.

The following table gives the average number of sand or dust storms at Riyan and Aden.

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Riyan	0	0	0	0.5	0	7	3	4	2	0	0	0	17
Aden	0.3	2	2	0.5	1	3	3	4	0	0.7	0.3	0.7	18

Sandstorms occur more often in the evening than at any other time of day. They are most frequent at Aden between 1600 and 0200 local time. As a rule they give little warning of their approach, though a dense cloud of sand may sometimes be seen banking up over the land a little while before a storm.

October to November.—Visibility improves during these months, and in general conditions are comparable with those of the north-east monsoon.

Local weather.—**Gulf of Aden.**—**African coast.**—**Bāb-al-Mandab to Capo Guardafui.**—**Capo Guardafui to Ras Hafun.**—**Socotra.**—**Winds.**—*North-east monsoon.*—*December to March.*—Land and sea breezes are well developed and affect the strength and direction of the monsoon.

On the coast of French Somaliland at Djibouti there is a light land breeze from southward at night, and in the early morning. The sea breeze from north-eastward or eastward sets in between 0800 and 1000, and, after strengthening in the early afternoon, becomes lighter about 1700 and drops altogether at night.

At Berbera, calms and light airs generally prevail during the night, but between 0600 and 0800 the wind is more likely to blow offshore. At 1100 the sea breeze sets in rather suddenly from northward, veering gradually north-eastward and attaining a velocity of 15 knots between 1400 and 1700, after which it falls off. Along the coast eastward of Berbera, a land breeze usually sets in from south-eastward or south-westward before midnight, and lasts until early morning. After a calm period the sea breeze from between northward and north-eastward sets in between 0900 and 1000.

At Capo Guardafui there is a gradual veer of wind as the season advances; from November to January winds are variable but mainly from an easterly point; in March they become south-easterly.

Near the eastern coast of Africa the north-east monsoon blows parallel with the coast but is not so steady as over the open sea. Within about 15 miles of the coast the wind dies down at night, and at sunrise sets in from northward. During the day it veers, reaching its greatest strength from eastward in the afternoon.

In Ghubbat Binnah the north-east monsoon blows strongly during the day from 0900 until about 2200. The winds at night are westerly and light. In the early morning they are north-north-westerly.

Off the northern coast of Socotra winds are north-easterly and may blow in violent gusts for several days at a time, so the northern side of the island should be given a wide berth. Throughout the season the wind strengthens in the afternoon; it exceeds force 4 of the Beaufort scale on about one observation in two.

April to May.—Conditions along the coasts of French and British Somaliland are very similar to those of the north-east monsoon. Near Capo Guardafui, however, southerly winds become prevalent, and the south-west monsoon sets in at the end of April with south-south-westerly winds, often with violent gusts, rain, and overcast skies. 5
Before the arrival of the monsoon land and sea breezes probably prevail.

Off the northern coast of Socotra winds are probably south-south-easterly and light at night, becoming northerly by 1000. Northerly and north-easterly winds prevail during the afternoon. Winds become 10 more variable during May, and towards the end of this month are likely to blow, sometimes strongly, from a southerly point all day.

South-west monsoon.—June to September.—The south-west monsoon blows very strongly near Socotra from June to August, and continues with full force through the channel between that island and Capo 15 Guardafui, and thence across the Gulf of Aden to Ras Rujaima, situated about 30 miles south-westward of Mukalla. In September the wind becomes less strong, and land and sea breezes are more prevalent.

At Djibouti, during the night and early morning, there is a light southerly land breeze. During the day a strong south-westerly wind is 20 prevalent from about 1000. There appears to be no sea breeze.

At Berbera, strong “Kharif” winds blow at night from between south-south-west and south-west, reaching an average maximum force of 7 on the Beaufort scale at 0900 in July. Force 8 or more may be reached on 19 days in July and on from 11 to 13 days in June and 25 August. During the morning the wind veers and between 1300 and 1500 a sea breeze of a force of from 3 to 4 sets in quite suddenly from north-westward, slackening after 1600 to sundown. The land breeze sets in about 2100. During September the land breeze is much weaker and reaches its greatest strength between 1000 and 1100. The sea 30 breeze is, however, steadier, setting in about midday from a point westward of north. During the afternoon the wind veers and by 1800 it is north-easterly; it dies down rapidly at sunset. Along the coast of British Somaliland eastward of Berbera, the local winds are similar. Details of the time at which the south-westerly wind reaches its greatest 35 strength in different parts are not available, but where the coast is steeper it is possible that the maximum force may occur earlier than at Berbera.

Squalls from the land, lasting about an hour, and occurring most often between midnight and 0400, are liable to occur along the coast at 40 this season. These squalls are oppressively hot and very disagreeable; they may be followed by a period of calm.

Near Capo Guardafui winds are south-south-easterly; they tend to veer southward during the night, and back to easterly during the day.

October to November.—Conditions along the coasts of French and 45 British Somaliland are similar to those of the north-east monsoon with light southerly winds at night and a northerly sea breeze during the day. Land and sea breezes are prevalent at Socotra, and light winds and calms off Capo Guardafui. In October the prevailing wind direction is between north-east and east between Capo Guardafui and Ras 50 Hafun.

Temperature.—Humidity.—In French and British Somaliland the heat is intense during the south-west monsoon. Especially high temperatures are associated with the “Kharif.” The climate is trying for white people because of the moist, steamy atmosphere along the 55 coast, and the sandy dust-laden air. At both Berbera and Djibouti the

average temperature at the hottest time of day is about 106° . At night the temperature falls about 20° . The extreme highest recorded temperature is 116° at Berbera.

Relative humidity varies as little as 5 per cent. during the day at this season. The dry night wind is responsible for the low night humidity. June is the least humid month, with an average of 46 per cent. at Berbera. This comparatively low relative humidity is due to the fact that the temperature is so high that the air is not nearly saturated. There is, however, a large amount of moisture in the air; the average wet-bulb temperature exceeds 75° at 0900 and 1400 during the eight months March to November.

Temperatures fall gradually along the coast towards Capo Guardafui. Here the average maximum temperature is only from 83° to 88° and the minimum from 70° to 75° .

In October and November there is a rapid fall in temperature along the southern coast of the Gulf of Aden, but it remains fairly stationary near Capo Guardafui and the eastern coast of Africa.

From December to March is the cool season in French and British Somaliland. The northern part of Italian Somaliland is moderately cool from November to February. Temperatures rise by day to from 84° to 86° and fall by night to from 68° to 70° . Average humidity varies between 65 per cent. in November to 75 per cent. in March at Berbera. Wet-bulb temperatures remain below 78° , except occasionally in March.

In April and May temperature rises quickly along the coast. At Djibouti and Berbera it does not fall below 80° at night, rising to 95° by day. Very high temperatures have been recorded in May, e.g., 112° at Berbera.

On the coast southward of Capo Guardafui this season is the hottest of the year.

Cloud.—*North-east monsoon.*—*December to March.*—This coast is in general cloudier than that of Arabia. Djibouti has an average of from $\frac{1}{10}$ to $\frac{2}{10}$ cloud at 0800 and Berbera from $\frac{1}{10}$ to $\frac{1}{10}$. There is a well-marked clearing during the day. The cloudiest region is to be found near Capo Guardafui, where between $\frac{1}{10}$ and $\frac{1}{10}$ of the sky is covered in December and January and about $\frac{1}{10}$ in February and March. There is only a slight clearing in the afternoon.

April to May.—Skies are almost continuously clear; the average cloud amount being from $\frac{1}{10}$ to $\frac{2}{10}$. At Capo Guardafui the amount is $\frac{1}{10}$ in April and $\frac{1}{10}$ in May. In the latter month cloud tends to form during the day.

South-west monsoon.—*June to September.*—Skies are very clear. Djibouti has an average cloud amount of a little over $\frac{1}{10}$, and Berbera between $\frac{1}{10}$ and $\frac{2}{10}$. At Capo Guardafui the average amount is $\frac{1}{10}$ in June and July, decreasing to $\frac{2}{10}$ in August and September.

October to November.—The average amount of cloud is from $\frac{1}{10}$ to $\frac{2}{10}$ except at Capo Guardafui, where there is an increase to $\frac{1}{10}$ in November.

Precipitation.—Precipitation is scanty and variable over the whole area; the average annual amount of rain rarely exceeds 2 inches. During the south-west monsoon rain rarely falls except for about half an inch at Djibouti in August. Most of the precipitation occurs with the north-east monsoon, just under 0.5 inches of rain falling in each month, generally in short showers.

Visibility.—Fog or mist may occur locally in the early morning during the north-east monsoon. Haze is likely to occur over or near the land. From April onwards visibility progressively decreases.

During the south-west monsoon season the region of worst visibility is along the coast southward of Capo Guardafui in a belt stretching some 200 miles eastward from the coast. Mist or haze is reported on one occasion in 2 in July and August, and on one occasion in 4 in June and September. Frequently the land is entirely obscured. The reduction 5 of visibility has been attributed to desert dust, but it may be due to sea fog caused by warm air flowing over the cold water found near this coast.

Socotra is outside this area, and visibility there rarely falls below 5 miles. Along the coast of British Somaliland visibility is lowest from 10 June to August. Sand, or dust carried by the "Kharif" impedes visibility especially in the forenoon. The onset of the sea breeze usually brings an improvement. Sandstorms occur in other months, but are most frequent from June to August.

Clouds of dust and sand are also prevalent over the lowland of French 15 Somaliland, Golfe de Tadjura, and the adjoining parts of the Gulf of Aden.

Visibility improves in October and November when conditions become similar to those of the north-east monsoon.

PLACE—SUZ. LAT. 29° 56' N., LONG. 32° 33' E. Height above Mean Sea Level, 11 feet (3m4).
 Meteorological Table compiled from 10 to 23 Years' Observations, 1914 to 1936.

Month	PRES- SURE at M.S.L.	AIR TEMPERATURE				Relative humidity		Cloud amount Scale 0-10		RAIN		WIND DIRECTION										No. of days with gale	No. of days with fog or mist
		Daily max.	Daily min.	Mean of		0800	1400	Ave- rage fall	No. of days with 1/4 or more	Percentage of observations from													
				Highest in each month	Lowest in each month					N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm					
mb.	° F.	° F.	° F.	° F.	%	%	in.	in.	48	3	4	2	2	1	1	18	5	6	9	7	knots	—	—
January	68	49	74	43	74	50	3-7	3-4	0-9	48	3	4	2	1	1	21	6	8	9	0	4-5	—	0-2
February	70	50	79	43	71	46	3-6	3-0	0-7	43	4	2	1	1	1	21	6	8	9	0	5-6	—	0-1
March	76	54	89	47	65	40	2-8	2-1	0-6	58	2	2	1	1	1	18	3	2	10	4	7-0	—	0-1
April	83	58	97	51	64	36	2-1	2-0	0-2	68	1	1	1	1	1	14	2	2	7	4	7-0	—	0
May	90	65	107	58	62	34	2-2	2-0	0-1	72	1	1	1	1	1	12	1	1	6	5	7-8	—	0-1
June	95	69	107	64	63	32	0-6	0-3	0-1	85	1	1	1	1	0	7	1	0	3	2	7-8	—	0-1
July	1007	98	73	105	68	69	0-3	0-1	0	90	1	1	1	0	0	6	0	0	3	1	7-2	—	0
August	1008	97	73	103	69	71	0-1	0-1	0	94	1	1	1	0	0	7	0	0	1	1	7-2	—	0-1
September	1011	92	70	101	65	73	0-3	0-1	0	96	1	1	1	0	0	2	0	0	1	0	7-8	—	0
October	1014	88	66	96	60	74	1-4	1-3	0-2	88	1	1	1	0	0	6	0	0	6	4	7-0	—	0
November	1016	80	60	89	51	74	2-7	2-9	0-4	75	2	2	1	2	1	8	1	2	4	5	5-5	—	0-1
December	1017	71	52	78	44	73	3-1	3-5	0-7	53	3	3	2	3	2	19	2	3	5	9	4-0	—	0-6
Means	84	62	103*	41**	70	40	2-1	1-9	—	72	2	1	1	1	1	11	2	2	5	4	6-7	—	1
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Extreme values	—	—	118†	37†	—	—	—	—	—	0-6	4	—	—	—	—	—	—	—	—	—	—	—	—
No. of years' observations	14	21-23		17-19		18-20		14-16		21-22		10										—	10

Hours of observation: '0800, 1400, 2000, Egyptian Standard Time.

* Mean of highest each year.

** Mean of lowest each year.

† Highest recorded temperature.

‡ Lowest recorded temperature.

§ Mean of observations at '0800, 1400, 2000.

|| Days on which visibility falls below definition unknown.

Authorities:—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—TOR. LAT. 28° 14' N., LONG. 33° 37' E. Height above Mean Sea Level, 6 feet (1m9).
 Meteorological Table compiled from 11 to 30 Years' Observations, 1905 to 1936.

MONTH	PRES- SURE at M.S.L.	AIR TEMPERATURE				Relative humidity	Cloud amount Scale 0-10		RAIN		WIND DIRECTION										No. of days with fog or mist	No. of days with gale	
		Daily max.	Daily min.	Mean of each month	Lowest in each month		0800	1400	Aver- age fall	No. of days with 0.04 in. or more	Percentage of observations from												
											°												
											N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	°			
January	mb. 1017	° F. 69	° F. 43	° F. 78	° F. 42	% 62	% 55	3.0	2.8	in. 0.1	48	10	4	0	2	0	0	20	16	knots 5.3	—	—	0
February	1016	71	49	80	45	57	53	2.6	2.4	0.1	46	46	2	0	4	0	0	22	18	5.3	—	—	0
March	1014	76	55	88	46	57	56	2.2	2.3	0.0	31	1	1	1	1	1	0	36	23	6.0	—	—	0
April	1011	83	61	96	52	59	53	2.0	1.9	0.0	23	1	0	7	1	1	1	47	21	6.6	—	—	0
May	1010	88	68	100	59	65	51	1.7	2.2	0.0	18	0	0	6	1	2	1	54	19	6.8	—	—	0
June	1007	92	74	104	67	67	51	0.8	0.4	0.0	21	0	0	0	3	0	1	68	7	10.2	—	—	0
July	1006	93	76	104	69	69	51	0.3	0.2	0.0	15	0	0	0	3	0	1	71	10	8.9	—	—	0
August	1005	94	78	102	70	68	54	0.1	0.3	0.0	14	0	0	0	1	0	2	73	10	8.4	—	—	0
September	1009	89	73	99	66	66	60	0.2	0.4	0.0	17	1	0	0	0	0	1	73	8	9.7	—	—	0.2
October	1013	84	66	93	59	63	63	1.2	1.4	0.0	21	3	0	0	0	0	1	41	29	5.3	—	—	0
November	1015	79	58	87	51	56	60	2.1	2.4	0.1	32	14	3	0	2	1	1	19	23	3.9	—	—	0
December	1017	73	51	81	43	61	57	3.0	2.8	0.1	41	11	6	0	4	1	1	16	21	4.3	—	—	0
Means	1012	83	63	106*	40**	63	55	1.5	1.6	—	27	4	1	0	3	0	1	46	18	6.8	—	—	—
Totals	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—
Extreme values	—	—	—	111†	38††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
No. of years' observations	30	30	30	30	30	14-16		30		30										30	—	11	

Hours of observation : 0800, 1400, 2000, Egyptian Standard Time

* Mean of highest each year.
 †† Lowest recorded temperature.

† Highest recorded temperature.
 § Days on which visibility falls below definition unknown.

Authorities :—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—HURGHADA. LAT. 27° 14' N., LONG. 33° 51' E. Height above Mean Sea Level, 10 feet (3m).
 Meteorological Table compiled from 6 to 8 Years' Observations, 1927 to 1936.

MONTH	PRES- SURE M.S.L. Mean	AIR TEMPERATURE Mean of				Relative humidity 0—10	Cloud amount Scale 0—10	RAIN		WIND DIRECTION										No. of days with gale	No. of days with fog or mist	
		Daily Max.	Daily Min.	° F.	° F.	° F.		Average fall	No. of days with 0.04 in. or more	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm				
		mb.			° F.	° F.	%	in.														
January	1013	71	51	82	45	68	1.8	0	0.1	3	0	0	1	3	1	43	43	0	0	14.5		
February	1016	72	49	87	48	55	1.7	0	0	4	0	0	1	3	3	38	50	0	0	15.5		
March	1015	78	60	94	53	46	0.7	0	0	13	1	0	0	3	3	20	56	0	0	15.5		
April	1013	88	69	98	60	40	0.7	0	0	27	1	0	0	3	1	5	63	0	0	15.5		
May	1011	90	74	106	68	50	0.1	0	0	39	3	0	0	1	1	1	52	0	0	14.0		
June	1009	94	76	109	70	56	0.0	0	0	41	1	0	0	0	0	0	56	1	0	15.5		
July	1007	96	77	99	71	55	0.0	0	0	41	4	0	0	0	0	0	55	0	0	15.5		
August	1007	96	77	99	71	55	0.0	0	0	38	1	0	0	0	0	0	55	0	0	16.7		
September	1010	91	73	98	66	57	0.0	0	0	34	0	0	0	0	0	0	63	0	0	18.3		
October	1014	87	67	88	61	54	0.5	0	0	22	0	0	0	0	0	0	69	0	0	15.0		
November	1016	81	60	88	53	52	1.3	0	0.1	9	0	0	1	0	1	23	61	0	0	15.0		
December	1013	74	53	82	45	54	1.3	0	0	4	1	0	1	1	3	50	40	0	0	13.0		
Means	1013	84	63	105*	45**	53	0.7	0	0.3	23	1	0	1	1	1	17	56	0	0	15.0		
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Extreme values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years' observations	8	8	8	8	8	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	

Hour of observation : 0800, Egyptian Standard Time.

* Mean of highest each year.

** Mean of lowest each year.

† Highest recorded temperature.

‡ Days on which visibility falls below.

†† Lowest recorded temperature.

Authorities :—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—DAEDALUS. LAT. 24° 55' N., LONG. 35° 52' E. Height above Mean Sea Level, 13 feet (4m0).
 Meteorological Table compiled from 2 to 6 Years' Observations, 1929 to 1936.

MONTH	PRES- SURE at M.S.L.	AIR TEMPERATURE				Relative humidity		Cloud amount Scale 0—10		RAIN		WIND DIRECTION								No. of days with fog or mist	No. of days with gale	No. of days with fog or mist																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		Daily max.	Daily min.	Highest in each month	Lowest in each month	0800	1400	Aver- age fall	No. of days with 0·04 in. or more	Percentage of observations from																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Hours of observation : 0800, 1400, 2000, Egyptian Standard Time.

* Mean of highest each year.

** Mean of lowest each year.

† Highest recorded temperature.

†† Lowest recorded temperature.

‡ Days on which visibility falls below definition not known.

Authorities :—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—PERIM. LAT. 12° 39' N., LONG. 43° 24' E. Height above Mean Sea Level, 88 feet (26m8).
 Meteorological Table compiled from 3 to 4 Years' Observations, May, 1940, to 1943.

MONTH	PRES- SURE at M.S.L.	AIR TEMPERATURE				Relative humidity	Cloud amount Scale 0-10	RAIN	WIND DIRECTION												Mean wind speed	No. of days with gale or No. of days with fog or mist				
		Daily max.	Daily min.	Highest in each month	Lowest in each month				Percentage of observations from						Percentage of observations from											
									0900						1500											
									No. of days with 0-04 in. or more						No. of days with 0-04 in. or more											
									Average fall	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.	NE.			E.	SE.	S.	SW.
January	mb. 1015	° F. 84	° F. 85	° F. 87	% 73	5-3	in. 0-4	0	1	16	71	9	0	1	1	1	0	3	61	23	3	1	2	0	15	6
February	1013	85	86	87	75	5-2	0-1	1	6	16	64	7	0	0	4	2	2	5	52	23	4	0	7	1	15	16
March	1012	87	88	89	74	5-4	0-6	2	8	8	63	10	0	2	9	1	2	8	44	24	2	1	6	0	12	13
April	1010	87	88	89	74	5-4	0-2	1	2	1	8	14	0	2	9	1	2	0	51	27	2	1	0	0	10	12
May	1007	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
June	1006	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
July	1004	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
August	1004	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
September	1007	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
October	1011	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
November	1013	88	89	90	73	5-3	0-0	0	5	1	39	23	1	6	15	3	5	0	33	38	3	4	13	0	10	12
December	1015	88	89	90	73	5-3	0-6	1	0	14	76	10	0	0	0	0	0	0	67	27	3	1	0	0	12	15
Means	1010	81	105*	71**	71	4-5	2-7	8	1	9	48	12	1	8	12	1	9	1	41	25	2	3	14	1	12	14
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Extreme values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
No. of years' observations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Zone time.

* Mean of highest each year.

** Mean of lowest each year.

† Lowest recorded temperature.

‡ Days on which visibility falls below

† Highest recorded temperature.
‡ Force 8 or more Beaufort Scale.

Authorities:—MS. data at M.O.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—ADEN. LAT. 12° 47' N., LONG. 44° 59' E. Height above Mean Sea Level, 123 feet (37m5).
 Meteorological Table compiled from 4 to 5 Years' Observations, 1940 to 1943.

MONTH	PRES- SURE at M.S.L. Mean	AIR TEMPERATURE Mean of				Cloud amount Scale 0—10	RAIN		WIND DIRECTION												No. of days with fog or mist No. of days with gale										
		Daily max.	Daily min.	Highest in each month	Lowest in each month		Relative humidity		Average fall No. of days with 0.04 in. or more	0000						1500						Mean wind speed									
										Percentage of observations from						Percentage of observations from															
										N.	NE.	E	SE.	S.	SW.	W.	NW.	Calm	N.	NE.		E.	SE.	S.	SW.	W.	NW.	Calm	0000	1500	s
		° F.	° F.	° F.	%	in.		19	52	19	3	1	0	0	1	5	9	27	27	12	22	2	1	0	1	3	6	7	0		
January	mb.	85	73	87	69	0.2	1	19	45	26	4	0	0	0	0	0	6	23	27	13	21	2	1	0	0	1	3	6	7	0	
February	1014	86	75	89	71	0.7	1	18	46	17	4	2	0	0	0	3	10	28	27	13	21	2	1	0	0	1	3	7	7	0	
March	1012	88	76	93	78	0.6	0	17	56	16	4	2	0	0	0	4	9	32	20	12	25	2	0	0	0	0	1	7	7	0	
April	1011	93	79	98	74	0.0	0	13	54	11	15	20	0	0	0	3	7	7	30	20	25	5	1	0	0	0	0	8	7	0	
May	1007	95	83	100	79	0.0	0	9	34	7	21	35	4	0	1	9	3	7	0	20	37	4	0	0	0	0	0	5	8	0	
June	1004	97	86	101	82	0.0	0	15	34	11	15	20	0	0	0	9	3	7	0	20	37	4	0	0	0	0	0	5	8	0	
July	1003	94	82	99	77	0.0	0	4	7	2	21	35	4	0	2	3	0	0	0	17	70	11	0	0	1	1	10	10	0	0	
August	1003	93	82	99	78	0.0	0	2	4	1	14	33	10	0	0	6	0	0	0	14	75	11	0	0	1	1	10	10	0	0	
September	1007	95	83	99	77	0.4	0.3	10	23	9	12	33	6	0	0	7	1	5	4	14	69	6	0	0	0	1	5	8	0	0	
October	1012	92	78	97	74	0.2	1	21	47	11	4	7	0	0	0	10	3	15	11	14	47	5	0	0	0	1	5	8	0	0	
November	1013	91	75	95	71	0.0	0	21	51	19	3	0	0	0	0	6	7	14	7	15	50	3	0	0	0	4	5	7	7	0	
December	1016	86	74	91	69	0.2	2	21	50	19	4	0	0	0	0	6	5	21	18	11	39	1	0	0	0	4	5	6	7	0	
Means	1010	91	79	103*	69*	—	—	15	37	13	9	18	2	0	0	6	4	15	12	16	47	4	0	0	2	6	8	—	—	—	
Totals	—	—	—	109†	61††	2.3	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Extrema values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years' observations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

4-5

Zone time.

* Mean of highest each year.
 †† Lowest recorded temperature.

** Means of lowest each year.
 ‡ Days on which visibility falls below.

† Highest recorded temperature.
 § Beaufort force 8 or more.

Authorities :—MS. data at M.O.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—QUSEIR. LAT. 26° 8' N., LONG. 34° 18' E. Height above Mean Sea Level, 23 feet (7m0).
 Meteorological Table compiled from 2 to 8 Years' Observations, 1927 to 1936.

MONTH	PRES- SURE at M.S.L.	AIR TEMPERATURE				Relative humidity		Cloud amount Scale 0—10		RAIN		WIND DIRECTION								No. of days with gale	No. of days with fog or mist	
		Mean of				%	%	0800	1400	Aver- age fall	No. of days with 0·04 in. or more	Percentage of observations from										
		Daily max.	Daily min.	Highest in each month	Lowest in each month							N.	NE.	E.	SE.	S.	SW.	W.	NW.			Calm
January	mb.	73	57	88	50	64	51	1·3	1·7	0	0	31	4	1	2	1	1	27	32	1	13·5	0
February	1015	73	58	88	56	52	45	1·1	1·3	0	0	38	9	2	3	3	1	21	28	0	13·5	0
March	1014	77	62	90	56	56	44	0·8	0·7	0	0	41	5	2	3	3	2	14	27	0	13·0	0
April	1012	82	67	91	62	58	41	0·5	0·9	0	0	53	3	1	1	4	6	10	27	0	13·0	0
May	1010	88	74	97	68	57	41	0·7	1·1	0	0	51	6	4	2	1	6	6	26	0	14·6	0
June	1008	92	78	100	74	47	47	0·1	0·1	0	0	56	4	1	2	1	1	5	31	0	16·0	0
July	1006	93	79	100	76	46	46	0·0	0·0	0	0	49	0	2	3	0	3	20	26	0	16·0	0
August	1006	94	81	99	77	55	47	0·0	0·0	0	0	49	0	2	3	0	4	8	24	0	12·0	0
September	1009	91	78	96	74	47	47	0·5	0·4	0	0	51	5	1	1	0	1	14	33	0	13·0	0
October	1013	87	74	98	80	60	50	0·7	0·9	0·2	0·1	43	7	1	0	0	1	13	34	0	11·9	0
November	1015	82	68	89	62	51	51	0·9	0·9	0·1	0·4	34	10	2	1	1	4	23	33	0	11·1	0
December	1017	76	61	88	53	51	51	0·9	1·0	0·1	0·4	26	6	1	1	1	4	23	33	0	11·6	0
Means	1012	84	70	102*	49**	55	47	0·6	0·7	—	—	43	7	2	1	3	1	13	30	0	13·0	—
Totals	—	—	—	—	—	—	—	—	—	0·3	0·5	—	—	—	—	—	—	—	—	—	—	—
Extreme values	—	—	—	104†	39††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
No. of years' observations	8	8				6		6		8		8						8				

Egyptian Standard Time.

* Mean of highest each year.

† Highest recorded temperature.

** Mean of lowest each year.

†† Lowest recorded temperature.

§ Days on which visibility falls below definition not known.

§ Mean of observations at 0800, 1400, 2000.

Authorities :—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—PORT SUDAN. LAT. 19° 37' N., LONG. 37° 13' E. Height above Mean Sea Level, 18 feet (5m5).
 Meteorological Table compiled from 11 to 32 Years' Observations, 1905 to 1936.

MONTH	PRES- SURE at M.S.L. Mean	AIR TEMPERATURE Mean of				Relative humidity		Cloud amount Scale 0-10		RAIN		WIND DIRECTION								Mean wind speed	No. of days with gale	No. of days with fog or mist
		Daily max.	Daily min.	Highest in each month	Lowest in each month	0800	1400	Average fall	No. of days with 0-04 in. or more	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm				
Percentage of observations from																						
°																						
January	mb.	81	68	86	61	66	66	8-7	0-3	1	53	19	11	2	0	1	1	12	1	0-1	—	
February	1015	81	68	86	59	66	66	2-9	0-2	0-4	51	17	16	2	0	1	1	11	0	2-7	—	
March	1014	84	67	90	60	65	65	2-1	0-0	0-1	54	18	14	2	2	1	1	6	3	0-0	—	
April	1012	89	71	96	63	68	68	1-9	0-0	0-1	49	18	20	2	2	1	1	4	3	0-0	—	
May	1009	96	76	104	68	73	73	2-0	0-0	0-1	32	18	30	5	5	1	2	3	4	0-0	—	
June	1008	102	78	112	73	89	43	1-6	0-0	0-1	33	17	31	3	2	3	3	4	4	0-0	—	
July	1006	106	83	113	75	89	41	2-0	0-2	0-8	23	11	28	7	6	7	13	5	2	0-0	—	
August	1006	106	84	112	76	41	45	2-4	0-0	0-7	31	10	26	8	4	5	12	4	2	0-0	—	
September	1006	106	84	112	76	41	45	2-4	0-0	0	31	10	26	8	4	5	12	4	2	0-0	—	
October	1007	100	79	109	74	46	48	1-7	0-6	1	31	15	28	3	1	2	5	5	1	0-0	—	
November	1011	93	76	92	69	69	64	3-3	1-8	4	45	17	23	3	1	1	1	9	0	0-0	—	
December	1013	88	74	88	64	68	68	3-6	1-0	2	45	18	16	3	1	0	1	12	1	0-0	—	
1014	83	71	88	64	68	68	68	3-6	1-0	2	45	18	16	3	1	0	1	12	1	0-0	—	
Means	1010	92	74	99*	68**	55	57	2-6	—	—	40	16	23	4	2	2	4	7	2	7-0	—	
Totals	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Extreme values	—	—	—	116†	54††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years' observations	80	30			32			32			30								80	—	11	

Hours of observation : 08^h 0, 1400, 2000, Egyptian Standard Time.

* Mean of highest each year.

** Mean of lowest each year.

† Highest recorded temperature.

†† Days on which visibility falls below definition unknown.

• Mean of highest each year.

• Mean of lowest each year.

• Days on which visibility falls below definition unknown.

Authorities :—Cairo, Physical Dept., Climat. Normals, 1938.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—KAMARĀN ISLAND. LAT. 15° 20' N., LONG. 42° 36' E. Height above Mean Sea Level, 25 feet (7m6).
 Meteorological Table compiled from 1 to 12 Years' Observations, 1922 to 1934, 1942 to 1944.

MONTH	PRES- SURE at M.S.L. ° Mean	AIR TEMPERATURE Mean of				Relative humidity		Cloud amount Scale 0-10		RAIN		WIND DIRECTION												No. of days with fog or mist																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
		Daily max.	Daily min.	Highest in each month	Lowest in each month	0000	1200	Average fall	No. of days with 0.01 in. or more	0000						1200						Mean wind speed	No. of days with fog																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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January	mb. 1013	° F. 82	73	87	71	65	75	4	1	0	0	0	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Standard of time, G.M.T.

* $\frac{1}{2}(2 + 6 + 12 + 18)$.

† Highest recorded temperature.

* Mean of highest each year.

†† Lowest recorded temperature.

** Mean of lowest each year.

‡ Days on which visibility falls below 2 nautical miles.

Authorities :—MS. data at M.O.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—RIVAN. LAT. 14° 39' N., LONG. 49° 23' E. Height above Mean Sea Level, 49 feet (15m).
 Meteorological Table compiled from 2 to 3 Years' Observations, April, 1942, to February, 1944.

MONTH	PRES- SURE at M.S.L. †	AIR TEMPERATURE Mean of				Relative humidity	Cloud amount Scale 0-10	RAIN		WIND DIRECTION												Mean wind speed	No. of days with gale •	No. of days with fog or mist ‡						
		Daily max.	Daily min.	Highest in each month	Lowest in each month			Average fall	No. of days with 0.04 in. or more	0900						1500														
										Percentage of observations from						Percentage of observations from														
										N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.	NE.	E.				SE.	S.	SW.	W.	NW.	Calm
										0900	1500																			
January	mb.	1015	88	68	85	63	0.2	1	0.2	29	38	11	5	2	0	2	2	11	1	0	7	64	28	0	0	0	4	10	0-0	
February	1014	85	68	85	63	0.1	0	2.6	18	30	26	18	6	0	0	0	4	3	0	0	9	70	19	2	0	0	4	12	0-0	
March	1012	86	69	87	66	0.2	1	2.0	20	36	28	50	3	2	0	0	6	3	0	0	0	0	0	0	0	0	4	13	0-0	
April	1011	89	74	94	71	0.0	0	2.9	0	32	28	50	19	6	0	0	0	3	0	0	0	0	0	0	0	0	5	10	0-0	
May	1007	92	77	94	71	0.0	0	3.6	3	36	20	18	3	2	0	0	0	3	0	0	0	0	0	0	0	0	5	14	0-0	
June	1002	96	79	107	74	0.0	0	3.3	0	32	17	43	23	8	0	0	0	6	0	0	0	0	0	0	0	0	5	14	0-0	
July	1001	98	78	107	71	0.1	0	3.2	0	32	31	50	23	8	0	0	0	7	0	0	0	0	0	0	0	0	5	14	0-0	
August	1002	91	76	98	74	0.0	0	2.7	6	29	36	17	4	0	2	0	0	6	0	0	0	0	0	0	0	0	5	14	0-0	
September	1006	91	77	96	72	0.1	0.5	2.4	0	26	39	34	17	3	1	0	0	7	0	0	0	0	0	0	0	0	5	14	0-0	
October	1009	87	72	91	65	0.5	1	3.8	21	28	20	15	9	2	0	1	2	3	0	1	13	29	18	4	0	0	5	12	0-0	
November	1014	87	68	83	63	0.2	1	1.7	17	41	11	4	1	1	3	2	5	13	1	0	7	51	34	6	0	0	5	10	0-0	
December	1015	84	67	88	62	0.2	1	1.7	17	41	11	4	1	1	3	2	5	13	1	0	7	51	34	6	0	0	5	10	0-0	
Means	1009	88	78	107°	61°	67	2.8	9	19	21	27	11	2	1	2	1	8	7	1	0	7	45	28	18	1	0	5	11	1-0	
Totals	—	—	—	111†	80††	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Extreme values	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of years' observations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

2-3

Times of observation: 0800, 0900, 1500, 2100 Zone time.

† Mean of observations at 0900 and 1500.

‡ Mean of highest each year.

†† Lowest recorded temperature.

• Beaufort force 8 or more.
 † Highest recorded temperature.
 ‡ Days on which visibility falls below.

Authorities :—MS. data at M.O.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—SALALA. LAT. 17° 03' N., LONG. 54° 05' E. Height above Mean Sea Level, 55 to 59 feet (16^m7 to 18^m0).
 Meteorological Table compiled from 2 to 3 Years' Observations, November, 1942, to January, 1944.

MONTH	PRES- SURE at M.S.L. °	AIR TEMPERATURE Mean of				Relative humidity	Cloud amount Scale 0-10	RAIN		WIND DIRECTION										Mean wind speed	No. of days with fog or mist †	No. of days with gale ‡																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		Daily max.	Daily min.	Highest in each month	Lowest in each month			Average fall	No. of days with 0.04 in. or more	Percentage of observations from					Percentage of observations from																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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										N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calm	N.				NE.	E.	SE.	S.	SW.	W.	NW.	Calm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
January	mb.	° F.	° F.	° F.	° F.	%	%	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

° Mean of observations at 1000 and 1600. ‡ Beaufort force 8 or more.
 ° Mean of highest each year. † Highest recorded temperature.
 ° Mean of lowest each year. ‡ Days on which visibility falls below.

Authorities:—MS. data at M.O.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

PLACE—MASIRA. LAT. 20° 42' N., LONG. 58° 50' E. Height above Mean Sea Level, 45 to 58 feet (13m7 to 17m6).
LAT. 20° 39' N., LONG. 58° 54' E., 56 feet (17m0) from November, 1943, onwards.

Meteorological Table compiled from 1 to 2 Years' Observations, January, 1943, to February, 1944.

[illegible]

Times of observation: 0600, 1000, 1600, 2200 Zone time.

‡ Mean of observations at 1000 and 1600.
† Highest recorded temperature.
§ Days on which visibility falls below.

‡ Beaufort force 8 or more.
* Mean of highest each year.
†† Lowest recorded temperature.

Authorities:—MS. data at M.O.

**METEOROLOGICAL OFFICE,
AIR MINISTRY.**

PLACE—BERBERA. LAT. 10° 22' N., LONG. 45° 02' E. Height above Mean Sea Level {31 feet (9m4) to June, 1925.
45 feet (13m7)
Meteorological Table compiled from 2 to 33 Years' Observations, 1906 to 1938.

MONTH	PRES- SURE at M.S.L.	AIR TEMPERATURE			Relative humidity	Cloud amount Scale 0—10	RAIN		WIND DIRECTION																	No. of days with fog or mist	No. of days with gale																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		Daily max.	Daily min.	Highest in each month			Lowest in each month	Average fall	No. of days 0.01 in. or more	Percentage of observations from								Percentage of observations from																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
										0800								1400										Mean wind speed																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
										N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm	N.	N.E.	E.	S.E.	S.	S.W.	W.			N.W.	Calm	0800	1400																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
January	mb.	° F.	° F.	° F.	%	%	in.	0.4	0	2	5	2	1	4	0	0	0	19	78	0	0	0	0	0	3	0	2	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Mean of highest each year.
†† Lowest recorded temperature.

Hours of observation: 0800, 1400, 2000, 45° E. Meridian time.

** Mean of lowest each year.

† Highest recorded temperature.
‡ Days on which visibility falls below 2 nautical miles at any time.

Authorities:—MS. data at M.O.

PLACE—SOCOTRA. LAT. 12° 38' N., LONG. 53° 53' E. Height above Mean Sea Level, 147 feet (45m⁷).
 Meteorological Table compiled from 2 to 3 Years' Observations, November, 1942, to February, 1944.

MONTH	PRES- SURE at M.S.L. †	AIR TEMPERATURE Mean of				Relative humidity	Cloud amount Scale 0—10	RAIN		WIND DIRECTION												Mean wind speed	No. of days with gale §	No. of days with fog or mist 																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Times of observation : 0800, 1000, 1600, 2200 Zone time.

° Wind of Beaufort force 8 or more.

• Mean of highest each year.

†† Lowest recorded temperature.

** Mean of lowest each year.

‡ Mean of observations at 1000 and 1600.

† Highest recorded temperature.

§ Days on which visibility falls below.

Authorities :—MS. data at M.O.

METEOROLOGICAL OFFICE,
 AIR MINISTRY.

CHAPTER II

THE SUEZ CANAL AND SUEZ BAY

Chart 233.

THE SUEZ CANAL.—General remarks.—The Suez canal was opened for traffic on November 17th, 1869. By an international convention signed on October 24th, 1887, it was declared neutralised. It is exempt from blockade, and men-of-war and merchant vessels of all nations are allowed to pass through both in times of peace and war. 5

The regulations governing the navigation of the Canal and its ports are issued by the Canal Company; they are applicable both to men-of-war and merchant vessels. The greater part of these regulations are to be found on pages 66-73. 10

The length of the Canal from Port Said lighthouse (*Lat.* 31° 16' N., *Long.* 32° 19' E.) to its junction with Suez bay is 87½ miles, 76½ miles being straight and 11 miles curved. Of this distance 66½ miles are actual canal, and 21 miles pass through dredged channels in Lake Timsah and the Great and Little Bitter lakes. 15

The width of the Canal at the surface varies with the inclinations of the banks; for the first 33 miles southward of Port Said it is about 390 feet (118^m9) wide, and in the remainder from 295 to 330 feet (89^m9 to 100^m6) wide. The width of the bed, originally 72 feet (21^m9), has been widened to 148 feet (45^m1) throughout, and to not less than 180 feet (54^m9) in the bends. The depth throughout was, in 1938, not less than 37½ feet (11^m5). Vessels drawing 34 feet (10^m4) were, in 1940, permitted to pass through, and vessels of over 33,000 tons have made the passage. 20

Very large vessels proceed through the Canal with their own engines and a tug ahead. Nearly all vessels make part of their passage during the night. 25

The number of kilometres and hectometres from the lighthouse at Port Said is indicated on stones on the eastern bank.

There are thirteen signal stations on the banks of the Canal, which give directions to vessels regarding their passage. These are usually called gares from the fact that the Canal was specially widened there to enable a vessel to secure to the bank so that another might pass. 30

Mooring bollards for vessels to secure to are placed on both banks at a distance of about 70 yards (64^m0) apart; they will bear a strain sufficient to cant any vessel. In the event of running hard aground the best shore anchor is a spar buried horizontally on the inner side of the bank with vertical planks in front, the hawser being led through a cutting. 35

Vessels proceeding at night must be provided with a searchlight fitted in accordance with the Canal Company's requirements; the apparatus can be hired from one of the shipping agents at either end of the Canal, and comprises a projector, dynamo and engine. See page 70. 40

In 1940, 2,459 vessels, with a net tonnage of 13,092,615, passed through the Canal, of which 1,219 vessels, with a net tonnage of 6,841,531, were British. 45

The average time taken to go through was, in 1930, 14 h. 34 m.

The Suez Sweet water canal.—A fresh-water canal runs from

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Chart 233.

the Nile at Cairo to the Canal at Ismaïlia ; about 3 miles before reaching that town a branch of this canal follows the line of the railway and the Suez canal to Suez. The depth in the Suez Sweet Water canal, which varies with the height of the Nile, is about 4 feet (1^m2). A branch from this canal runs from Ismaïlia to Port Said.

Signals.—A vessel approaching Port Said (*Lat. 31° 16' N., Long. 32° 19' E.*) and wanting a pilot should display, by day, Flag G of the International Code of Signals, or the national pilot flag ; at night, lights exhibited at the foremast head followed by rockets or *blue* lights.

The following harbour signals are shown at Port Said :—

If the weather does not prevent the pilot boat from going out :—

Pilot is going out to you. By day. Flag G of the International Code of Signals at the masthead of the pilot boat.

At night. A *white* rocket.

If the weather prevents the pilot coming onboard :—

Follow the pilot boat. The pilot will come onboard under the lee of the breakwater. By day. Flags J J of the International Code of Signals displayed at the masthead of the pilot boat.

At night. A *blue* light.

If the weather prevents the pilot boat from going out :—

The pilot boat cannot go out. By day. Flags K X R of the International Code of Signals displayed at Port Said light-tower.

At night. A *red* rocket.

Vessels in Port Said requiring a pilot should display, by day, Flag G of the International Code of Signals, or the national pilot flag ; at night, three *white* lights, disposed vertically, are exhibited at the foremast head.

Vessels requiring a pilot at Port Tauffiq (Thewfik) show the same signals as at Port Said.

Pilots for navigation in the Suez canal are due on board one hour and 30 minutes after the signal has been hoisted. Pilots for proceeding to sea or changing berth are due 30 minutes after the signal has been hoisted.

The following signals are to be shown by vessels manœuvring in Port Said harbour :—

By day.	At night.	Meaning.
Pendant No. 2 at the dip	Two <i>white</i> lights, vertically disposed, at the masthead . . .	The vessel is making fast.
Flag G at the dip	A <i>red</i> light over a <i>white</i> light at the masthead	The vessel is getting under way to proceed to sea.
Pendant No. 1 at the dip	A <i>white</i> light over a <i>red</i> light at the masthead	The vessel is getting under way to enter the canal.

The vessel showing these signals must not be passed or overtaken.

Note.—When these manœuvres have been completed the signals are to be hauled down or extinguished.

Pendant No. 2 over the code or answering pendant, at the masthead.	A <i>red</i> light between two <i>white</i> lights, vertically disposed, at the masthead.	The vessel has completed her manœuvre and may be overtaken or passed.
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Note.—All these pendants and flags are of the International Code of Signals.

Five or six short blasts repeated several times at short intervals	A <i>red</i> light at the stern and the same sound signal	I have reduced speed and may be obliged to stop or make fast.
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The following signals are to be shown by certain vessels on arrival off Port Said (*Lat. 31° 16' N., Long. 32° 19' E.*) or Port Taufiq :—

Mail steamers.	By day. A blue flag with a white P in the centre. At night. A <i>white</i> light.
Vessels having explosives on board.	By day. A ball above B flag of the International Code of Signals. At night. A <i>white</i> light above two <i>red</i> lights, disposed vertically.
Vessels carrying petroleum in bulk, if having a flash point below 73° F.	By day. B flag of the International Code of Signals between two balls. At night. Three <i>red</i> lights disposed vertically.
Vessels carrying petroleum in bulk, if having a flash point between 73° F. and 160° F.	By day. B flag of the International Code of Signals above a ball. At night. Two <i>red</i> lights above a <i>white</i> light, disposed vertically.
Vessels under compulsory or voluntary quarantine.	By day. A yellow flag. At night. A <i>red</i> light over a <i>green</i> light.

The only sound signals allowed in the Suez canal, at Port Said (*Lat. 31° 16' N., Long. 32° 19' E.*) and at Port Taufiq are as follows :—

- (a) The sound signals laid down in the International Regulations for Preventing Collisions at Sea.
- (b) Five or six short blasts, indicating " I have reduced speed and may have to stop to make fast ". This signal is to be repeated at short intervals until the vessel following answers with the same signal.
- (c) One long blast to call attention.
- (d) Communications between ships and tugs. Signals to be used in bad weather :—

Signal.	Meaning.
One long blast followed by one short blast and one long blast.	To order the tug to push.
One long blast followed by three short blasts and one long blast.	To order the tug to take the hawser.

Note.—A short blast is one of one second's duration ; a long blast is one of five or six seconds' duration.

Signals to be made by vessels in the Canal :—

- | | |
|--|---|
| A. By day : Five or six short blasts repeated several times at short intervals. | } I have reduced speed and may be obliged to stop or make fast. |
| At night : A <i>red</i> light at the stern and the same sound signal. | |
| B. Signals to be made by vessels making fast :— | |
| By day : Pendant No. 2 of the International Code of Signals displayed so as to be visible just above the bridge. | } I am manœuvring to make fast. |
| This signal is to be displayed at half mast when the vessel has been made fast. | |
| At night : Switch off the searchlight and switch on the overhead light when the handling of the mooring ropes has started. | |
| Switch off the overhead light and the port and starboard navigation lights and place two or three <i>white</i> lights along the bulwarks when the vessel has been made fast. | |

Notes.— A vessel which is to be passed by a ship carrying an inflammable cargo shall not place kerosene, oil or candle lights along the bulwarks ; electric lights only are to be used. If electric lights are not available, no lights should be placed.

Any vessel which makes fast owing to bad weather, insufficient speed, breakdown, etc., must inform all other vessels in the vicinity of the manœuvre she is about to make as indicated in paragraph A above.

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A vessel once made fast must show the "voluntary mooring signal" as indicated below; she may then be passed or overtaken:—

By day.	At night.	Meaning.
Pendant No. 2 over the code or answering pendant of the International Code of Signals at the mast-head.	A <i>red</i> light between two <i>white</i> lights, vertically disposed, at the mast-head.	I have made fast voluntarily. I can be passed or overtaken.

Signals to be shown by vessels aground:—

By day.	At night.	Meaning.
Pendant No. 2 at the masthead.	A <i>red</i> light at the mast-head.	I am aground. Assistance is not required.
Pendant No. 2 and one ball at the masthead.	Two <i>red</i> lights, vertically disposed, at the mast-head.	I am aground. A tug is required.
Pendant No. 2 and two balls at the masthead.	Two <i>red</i> lights and two <i>white</i> lights, vertically disposed and on separate halliards, at the masthead.	I am aground. A tug is required and lightening is probably necessary.

- 5 At the same time as the grounding signal is displayed, a vessel aground must exhibit, at night, a *red* light at her stern.

Regulations for navigation.—The following articles are extracted from Rules of Navigation issued by the Suez Maritime Canal Company.

- 10 Art. 1.—*a.* Transit through the Suez canal is open to vessels of all nations, subject to their complying with the conditions hereinafter stated.

The Canal Company, however, reserves to itself the right to refuse access to the Canal, or to order the towage or convoying of vessels which it may consider dangerous to shipping generally. *See* Article 5.

- 15 *b.* On receiving a copy of the regulations, captains of vessels bind themselves to abide by and conform with them in all points, to comply with any requests, and to obey all signals prescribed in the Special Signal book, a copy of which is placed at their disposal.

- 20 *c.* When in the Canal or its ports or roads, a ship, craft or floating apparatus of any description is responsible for any damage and consequential loss it may cause either directly or indirectly to itself or to the property, ships, craft or floating apparatus of any description belonging to a third party or to the Canal Company.

- 25 *d.* Vessels carrying petroleum, or dangerous materials, must comply with these regulations and also with the Rules of Navigation Appendix for vessels carrying dangerous materials, a copy of which is given to captains on their arrival in either of the Canal entrance ports.

Art. 2.—The maximum draught authorised, in January, 1940, was 34 feet (10^m4).

- 30 Vessels are not permitted to enter the Canal when their draught exceeds the maximum, or when they are not well-found in every respect for navigation in the Canal.

- 35 Art. 3.—All vessels over 500 tons gross must take, either for entering or leaving Port Said or Port Taufiq, or for transit through the Canal, a pilot of the Canal Company, who will furnish particulars of the courses to be steered.

Captains are held responsible for all groundings or accidents of any kind, resulting from the navigation or management of their vessels by

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day or at night. Pilots only give advice on manœuvring the ship ; they place at the disposal of the captains their experience and practical knowledge of the Canal, but, as they are not acquainted with the defects and peculiarities of individual steam vessels and their machinery, whether in navigating, stopping, steering, etc., the responsibility of handling the ship devolves solely upon the captain. It is therefore for the captain, taking into account the indications given by the pilots, to give the necessary orders to the helm, to the engines and to the tugs. If, in the interests of rapid manœuvring, the captain thinks it preferable to allow the pilot to give orders direct, manœuvres carried out in these circumstances shall be considered as having been carried out on the orders of the captain, and to be his sole responsibility.

The functions of pilots begin, or end, at the outer buoys off Port Said and Port Taufiq.

Art. 4.—Mail vessels are those performing a regular mail service under contract with a Government at fixed dates appointed in advance. The contract must have been duly exhibited to the Canal Company by the shipowners.

Art. 5.—*a.* In the Canal terminal ports, if the Canal Company deems it necessary, tugs may be placed at the disposal of captains to help to manœuvre their vessels on arrival and departure. Such help is free of charge. The tugs do not supply hawsers.

b. Apart from the case covered by *a*, tugs can be hired for mooring or towing, or for getting a ship afloat in the ports or outer harbours.

c. In accordance with the terms of Art. 1, paragraph *a*, the officials of the Canal Company may order that certain defective ships, or ships carrying dangerous cargoes, shall be towed or convoyed in the Canal by one of the Company's tugs.

In such cases charge will be made for towage.

d. At the request of an owner or his representative, tugs can be hired on a lump sum basis for the towage of any type of craft or vessel which cannot pass through the Canal under her own power.

e. With the exception of cases covered by Arts. 12 and 21, the captain of a vessel utilising a tug placed at his disposal has the exclusive direction and control of the manœuvres of both the vessel and the tug.

f. Whatever may be the conditions and circumstances under which the Canal Company places a tug at a vessel's disposal, the captain of the vessel has exclusively the direction and control of the operations ; consequently he bears the responsibility for any damage or accident whatsoever resulting from the use of the said tug.

Art. 6.—Shipowners are authorised to have their ships towed or convoyed by their own tugs, or tugs belonging to third parties, upon their entire responsibility. Such tugs must be approved by the Canal Company.

Apart from the special towage charges, tugs belonging to private owners are subject to the strict observance of all the Articles of Regulations relative to ships manœuvring, in transit or berthed.

Art. 7.—Captains of vessels intending to visit the Canal ports or pass through the Canal are requested to transmit by radio the following information to their agents, as soon as the vessel comes within range :—

The name and nationality of the vessel.

Whether she intends passing through or stopping in the harbour.

The probable hour of arrival and duration of stay.

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Whether she carries any dangerous cargo.

Art. 8.—*a.* When nearing the buoys in the approach to the channel, a vessel wishing to enter the Canal hoists the signal for a pilot as indicated on page 64. On coming on board, the pilot hands the captain a copy of these Rules and a pilotage form.

The captain fills up the pilotage form and gives it back to the pilot when the latter leaves the ship.

b. The following signals must be clearly displayed when entering the channel :—

(*a*) The vessel's commercial number in the International Code of Signals.

(*b*) The vessel's distinctive signal (mail vessel, coasting vessel, collier, oil-vessel, vessel having explosives, &c.) as given in the Special Signal book.

(*c*) If necessary, the quarantine flag.

c. The port officials direct the vessel to its mooring berth either by signals displayed at the flagstaff of the Canal Company's office, or verbally by sending a boat to meet the ship. The vessel must acknowledge the signal by hoisting the answering pendant.

d. When entering, shifting berth, or leaving, the captain must work his hawsers by means of the ship's boats, or with the help of the mooring boats, of a firm approved by the Canal Company.

Art. 9.—*a.* Vessels under way in the harbours or entrance channels shall conform to the International Regulations for Preventing Collisions at Sea.

b. In the harbours the speed of vessels must be reduced to the lowest limit* that will allow them to answer the helm. Captains must not hesitate to stop the engines when passing moored vessels, in order to prevent their hawsers carrying away and other accidents.

Art. 10.—*a.* The captain is responsible for mooring his vessel in the ports of the Canal.

b. He must attend specially to the instructions in the following paragraphs.

c. When the vessel is moored at buoys, the hawsers must be watched and handled so as to always ensure the vessel being properly moored.

If two vessels are moored to the same buoy, when one leaves the other must adjust her moorings.

Hawsers which have been slacked away for the passage of barges or tugs must be hauled taut as soon as possible.

d. Captains must conform to the advice which the port captain will give about the hawsers during the stay of their vessels in port, especially when, in the case of impending bad weather, he shall consider it necessary that the hawsers and shackles should be inspected and, if needs be, strengthened.

e. When a vessel is moored with her stern to the bank, the captain must keep himself continually informed of the draught of water aft, so as to avoid grounding on the submerged slope either as the result of the settling of the ship as she loads, or of her proximity to the bank.

f. At night, the vessel, either moored or manœuvring, must show the lights prescribed by the International Regulations for Preventing Collisions at Sea.

Moreover, vessels moored at right-angles to the bank must carry the

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forward *white* light at the extreme end of the vessel at a sufficient height for it to be clearly visible.

g. Unless otherwise authorised, barges alongside a vessel must not be more than two abreast. 5

h. It is forbidden to try the searchlight projector, or to move the propellers during the process of warming up, in the absence of the pilot, or without informing him if he is on board.

i. Vessels must not put their engines out of working order for any cause whatsoever without informing the Canal Company. In such 10 cases moorings shall be strengthened to avoid danger to the ship in case of bad weather.

j. The captain must always keep on board sufficient crew to ensure, besides the handling of the mooring hawsers, the manning of all available appliances for coping with a fire or leak. 15

k. The port captain or his delegate shall have free access on board the vessel to ensure the Regulations are carried out, to verify the vessel's sea-worthiness, and especially to ascertain that there is no dangerous cargo on board.

l. Vessels moored in the dock at Port Taufiq are subject to the same 20 regulations as in the Canal. They cannot be authorised to effect repairs which may deprive them of the use of their motive power.

Art. 11.—a. A captain wishing to change the berth of his vessel shall notify the port captain or his representative, stating the time when his ship will be ready to move, and whether he wishes the aid of a tug. 25 The new berth will be allotted by the port captain. A pilot will be sent in due course. The move shall take place at the time fixed by the port captain or his representative.

b. The charges entailed by a change of berth resulting from a request by the captain are payable by the vessel. If for want of steam the 30 vessel has to be towed, she must pay for the hire of tugs.

c. All charges entailed by a change of berth resulting from the captain's erroneous or incomplete declaration must be paid by the captain.

d. When necessary in the general interests of navigation, the port 35 captain may order a vessel to change her berth, and when so ordered the change shall be free of charge. The change shall be made as quickly as possible.

Art. 12.—a. In the case of fire on board, or leak, when in harbour, the captain must inform the port captain at once. At the same time 40 he must give general warning by means of long blasts on the steam whistle, and make ready for moving his vessel if requested to do so.

b. Neighbouring vessels must in such cases also be ready to shift berths.

c. The Canal Company's officials will direct operations, captains 45 placing at their disposal all available means; captains are nevertheless responsible, in all circumstances, for all damage or accidents which may be the direct or indirect consequence of the outbreak or of the salvage operations.

Art. 13.—a. Captains of vessels which do not enter the Canal, must, 50 during their stay at Port Said, report themselves at the Harbour office, and exhibit the special certificate showing the ship's capacity.

b. Captains of vessels intending to go to sea again must pay in advance the dues for pilotage and berthing, if any. They must state

Chart 233.

the hour of their departure by letter or telephone message addressed to the port captain by the ship's agent. They will apply for a pilot by clearly exhibiting half an hour before the stated hour of departure the signal prescribed on page 64.

c. Moorings must not be altered before the pilot is on board.

The vessel may get under way only if there is no signal from the Canal Company to the contrary.

When several vessels are ready to get under way at the same time, their order of sailing either for the Canal or for sea is fixed by the Harbour office.

d. The captain will hand back to the pilot when leaving the vessel the pilotage form after it has been filled in as required.

Conditions of passage through the Canal.—Art. 14.—When a vessel about to proceed through the Canal has moored, the captain must enter her at the transit office and pay the transit dues, as well as, when there is occasion, the dues for pilotage, towage, and berthing. A receipt is delivered to him which serves as a voucher in case of need.

The following written information must be handed in by him :—

20 Name and nationality of the vessel, authenticated by exhibiting the vessel's papers.

Name of the captain, names of the owners or charterers, port of departure, port of destination, draught, length, breadth, number of passengers as shown by the passenger list, statement of crew as shown by the vessel's articles, capacity of the vessel authenticated by producing her special certificate.

The captain must also exhibit his bill of health.

Art. 15.—a. All vessels ready to enter the Canal must have their yards braced forward, jib-booms run in, ladders inboard, boats swung in, and the derricks obstructing the view forward lowered.

b. At least four manilla or hemp mooring hawsers in good condition must be in readiness at suitable points on deck in case it should be necessary to make fast in the Canal, and every arrangement must be made for their quick handling.

35 One or two boats, according to the size of the vessel, must be in constant readiness for lowering in order to carry the hawsers to the mooring posts without any delay.

c. The bower anchors must be ready to let go.

The steering gear, and the engine-room telegraphs, must be ascertained to be in working order before entering the Canal.

d. Captains must, before entering the Canal, ascertain that deck loads, if any, are stowed so as not to affect the vessel's stability or impede the crew.

e. The captains of vessels in ballast must fill all spaces intended to be used for carrying water ballast in such proportion as the officials of the Canal Company may direct.

f. Steam vessels intending to go through the Canal at night must satisfy the officials of the Canal Company in Port Said or Port Taufiq that they are provided with a searchlight projector showing the channel about 1,300 yards ahead, and constructed so as to permit the beams of rays to be split quickly into two separate segments of 5° each, with a dark sector of 5° in the middle, and with electric overhead lights of sufficient power to light up a circular area of about 200 metres=656 feet, around the vessel.

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On vessels electrically propelled, or having electrically driven gear, the searchlight must be fed by an independent dynamo which must not be connected to the main switchboard.

The officials of the Canal Company decide whether the appliances fulfil the requirements of the regulations in order to ensure safe navigation of the Canal at night. 5

There is special insistence on care being taken that the escape of steam from the dynamo engine does not obstruct the view from the helmsman. Night transit may be suspended in case of damage to, or 10 imperfection in, the electric light appliances.

Art. 16.—Captains shall place the radio apparatus at the disposal of the Canal Company during transit through the Canal. Pilots shall be allowed to receive and send free of charge to the Company all service messages which may be deemed necessary. The radio watch will be 15 kept in accordance with the instructions of the pilot, and it may even be required that a continual watch shall be kept during the whole transit through the Canal.

The Canal Company's radio station is for messages in connection with the transit of vessels only. 20

Art. 17.—*a.* The captain will apply for a pilot by clearly exhibiting one and a half hours before the stated hour of departure, the signal prescribed on page 64.

b. Moorings must not be altered before the pilot is on board. The vessel may get under way only if there is no signal from the Canal 25 Company to the contrary.

c. When several vessels are ready to get under way at the same time, their order of sailing either for the Canal or for sea will be fixed by the Canal Company.

The Canal Company will prescribe the movements of vessels under 30 way in order to give full security to navigation, and to ensure, as far as possible, the speedy passage of mail steamers.

Consequently no vessel can demand immediate passage through the Canal as a right, nor will any claim be admitted in consequence of delay arising from the foregoing causes. 35

d. The captain must set a watch both by day and at night.

e. All steam vessels, tugs included, must stop whenever there is not a clear passage ahead.

They must slow down in passing sidings, sections of the banks which are being stone-faced or cut back, all vessels in sidings or under way, 40 hoppers, dredgers, and other floating craft.

f. As soon as a vessel is secured, whether in or out of a siding, she must hoist the signals prescribed in the Special Signal book.

Vessels must slack away any hawsers they may have across the Canal, as necessary to give free passage to tugs, steam launches, 45 hopper barges, and other light draught craft that may have to pass them.

Men must be constantly at hand ready to slacken the hawsers or cut them in case of need. Steam must always be kept on the vessel's engines which must be ready for working. 50

g. Vessels proceeding in the same direction are not allowed to overtake one another under way in the Canal.

Should a vessel be allowed to pass another one ahead of her, it must be done conformably with the directions given by the Canal Company's officials. 55

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h. Captains are forbidden to anchor in the Canal, except in cases of absolute necessity.

Art. 18.—The maximum speed of vessels passing through the Canal is normally $7\frac{1}{2}$ knots.

Art. 19.—*a.* The navigation of sailing craft of every description at night is entirely forbidden.

b. During transit at night vessels must keep their searchlight projector alight; they must carry their regulation navigation lights, and keep a man on the look-out forward.

c. When a vessel under transit at night is about to secure she must at once extinguish her searchlight projector and switch on her electric overhead lights. When she is secured she must extinguish her electric overhead lights and her regulation navigation lights, and hoist the lights prescribed in the Special Signal book.

d. Vessels navigating at night in Great Bitter lake must extinguish their searchlight projector except when in the portions immediately adjoining the outlets from the Canal into the lake, where the channels run between two lines of buoys.

e. Vessels unprovided with a searchlight projector are only allowed transit at night under exceptional circumstances, the captain being entirely responsible for any delay, mishap or damage of any description that may happen to his own vessel, as well as for any similar accidents that may be caused to other vessels in the Canal or to the Canal Company's craft and plant. Vessels going through the Canal under these conditions are subject to all the other rules for vessels passing through the Canal.

Art. 20.—*a.* In the Canal, its terminal ports and roads, sounding the steam whistle is only allowed as laid down in these regulations. See page 65.

b. Boats, other than the Canal Company's own, are not allowed to come alongside vessels which are under way or manœuvring, except the following at their own risk:—

The Quarantine and Police boats, the mooring boats, and the ship's agent boat.

c. It is prohibited to:—

Throw overboard in the ports of the Canal or at any point in the Canal during passage through it, earth, ashes, cinders, or articles of any kind.

Empty or let flow oil, petrol, heavy oil, fuel oil, or scourings, or cleansing water from tanks having contained such products. Loading, unloading, and generally handling of liquid fuel must be carried out so as to avoid any fuel leaking into the Canal, failing which, the Canal Company reserves to itself the right to stop such operations until the necessary repairs shall have been effected.

Pick up, without the direct intervention of the Canal Company's officials, any object that may have fallen into the Canal or its ports of access. Whenever any object or merchandise whatsoever falls overboard, the circumstances must immediately be reported to the Company. If the Company considers that the picking up cannot be effected by the interested parties without impeding the transit, the Company will proceed to carry it out, at their expense.

Fire any guns.

Take boats or floating appliances of any description in tow.

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Art. 21.—a. Whenever a vessel under way is accidentally stopped she must, if other vessels are following her, attract their attention by sounding five or six short blasts on her whistle or siren. This signal is to be repeated at short intervals until the vessel next astern answers by the same signal. The signal means "I have reduced speed and may have to stop or make fast."

Vessels stopped accidentally at night must immediately replace their *white* stern light by a *red* light.

In case of grounding, the captain must also immediately signal to that effect in accordance with the Special Signal book.

b. When a vessel grounds, the officials of the Canal Company alone are empowered to direct and superintend all operations required to get her off, including unloading and towing if necessary, captains placing all available means at their disposal. Nevertheless, captains remain responsible for all damage or accidents of any kind which may be the direct or indirect consequence of the grounding.

Attempts on the part of other vessels to get a vessel aground off are strictly prohibited.

c. When a vessel grounds, or stops in the Canal in consequence of an accident other than a collision and is an obstruction to navigation the Canal Company, in order to clear the fairway with all possible speed and to hasten her resuming her passage, does not claim any reimbursement of expenses incurred in getting the vessel off. If, once afloat, the vessel continues her passage in tow, she must from this moment pay the towage charges.

It is understood that the owners of vessels bear all expenses incurred in repairs, or putting their vessels into condition, necessary to enable them to re-start, whatever be the moment at which the damage may have taken place.

d. When a vessel grounds or stops in the roads, or ports, from whatever cause, or in the Canal in consequence of collision, all charges of getting her off, towing, unloading, re-loading, &c., are charged to the owners, and must be paid, as shown in the statement drawn up by the Canal Company, before the vessel leaves Port Said or Port Taufiq.

e. Whenever a collision appears probable, vessels must not hesitate to run aground, should this be necessary to avoid it.

Quarantine regulations.—No vessel is allowed to enter the Canal from southward without permission of the sanitary authorities at Suez (*Lat. 29° 58' N., Long. 32° 33' E.*), to obtain which it may be necessary to anchor, especially if it is desired to proceed through the Canal in pratique. An Egyptian sanitary guard is placed on board a vessel passing through the Canal in quarantine. When coaling in quarantine the coal bunkers, with the passages to and from them to the coal lighters must be screened off to the satisfaction of the chief of the sanitary guard before coaling is allowed to proceed.

Lights.—There are leading lights at the ends of reaches, and lights at intervals along the banks when the straight portions are long, and also at the curves.

Beacons and buoys.—All beacons and buoys marking the deep channel are painted black with white tops on the eastern side of the channel, and red on the western side. Where rocks occur at the edge of the channel, they are marked by small can buoys. The limits of the rocky parts are also marked by posts, surmounted by red marks, on the banks.

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Port Said to Qantara.—Port Said is situated at the northern entrance to the Canal. For the description of this harbour *see* Mediterranean Pilot, Vol. V. From abreast Port Said lighthouse to Qantara 5 $24\frac{3}{10}$ miles southward, the Canal runs straight through Lake Manzala (Menzaleh). The lake, on the eastern side, is now a dry flat sandy plain, scarcely above the level of the Canal; on the western side it receives the waters of the Nile by numerous channels, and ends in the delta; its level is variable according to the height of the Nile, but 10 as there is an opening from the lake to the Mediterranean its level is never very different from that of the Canal. On the western bank are the railway and the Sweet Water canal; the eastern bank is being constantly increased by dredgings from the Canal.

Qantara to Lake Timsah.—From Qantara to Lake Timsah 15 $17\frac{1}{2}$ miles southward, the Canal passes through slightly higher ground. The first curve is $27\frac{1}{2}$ miles, the second $28\frac{1}{2}$ miles, and the third, in the depression caused by Ballah lakes, 31 miles from Port Said light-tower; the next curve is $33\frac{1}{2}$ miles from the light-tower, and from this curve the Canal is straight to the northern curve of El Guisr, a further 6 miles; 20 the southern curve of El Guisr lies between the northern curve and Lake Timsah.

Lake Timsah.—Lake Timsah is situated almost in the middle of the Canal, which enters the lake by a curve. The course from northward through the channel in the lake is at first south-westerly, then 25 southerly, and finally south-easterly; the channel had, in 1938, been dredged to a least depth of $37\frac{1}{2}$ feet (11^m5). The Canal in the middle of the lake has been widened to about $3\frac{1}{2}$ cables and an additional area, one cable wide, westward of the canal, has been dredged to a depth of 33 feet (10^m1).

30 Between the edge of this latter area and the north-western side of the lake there are general depths of from 19 to 25 feet (5^m8 to 7^m6), but, in 1940, only vessels with a draught not exceeding 18 feet (5^m5) were permitted to anchor in this area.

Light.—A light is exhibited, at an elevation of 33 feet (10^m1), from 35 a red column, 16 feet (4^m9) in height, situated on the beach southward of the town of Ismaïlia (*Lat. $30^{\circ} 36' N.$, Long. $32^{\circ} 17' E.$*), which stands on the north-western shore of the lake.

Light-buoys.—The Canal through Lake Timsah is marked on the western side by red light-buoys exhibiting *red fixed* lights, and on the 40 eastern side by black light-buoys, with white tops, exhibiting *green fixed* lights.

Ismaïlia.—The town of Ismaïlia is the seat of the Central Administration of the Canal in Egypt. A British Consular officer is stationed here. Vessels passing through the Canal change pilots here. 45 The Canal Company have some tugs, and a small workshop for their own use; they also maintain a hospital.

There is a slipway, *see* Appendix I.

The Canal Company's tug stationed here communicates information by radio to vessels passing through the Canal. *See* Admiralty List 50 of Radio Signals.

Lake Timsah to the Great Bitter lake.—From the southern end of Lake Timsah the Canal trends about 3 miles south-eastward to the curve of Toussoum, and passes through several lagoons. A war memorial stands on the summit of Gebel Mariam, on the western side

Chart 233.

of the Canal about 44 miles from Port Said lighthouse. The western bank at Toussoum is 69 feet (21^m0) high:

From the curve of Toussoum the Canal trends about 6 miles straight southward to the Great Bitter lake, through compact sand or clay, which is not hard enough to be dangerous to vessels taking the ground. There are plantations of trees on the western bank, and there is also a flagstaff at Le Deversoir on the western entrance point to the lake.

Light-buoys.—A pair of light-buoys, the eastern buoy exhibiting a *green fixed* light and the western a *red fixed* light, are moored, one on each side of the Canal, about 4 miles southward of the curve of Toussoum.

Great Bitter lake.—The Great and Little Bitter lakes occupy a depression which was formerly connected with Suez bay; they are separated by a point projecting northward at Kabret, about 12 miles south-eastward of Le Deversoir.

Great Bitter lake has general depths of from 18 to 42 feet (5^m5 to 12^m8), depths of less than 18 feet (5^m5) extending in places to as much as 1½ miles offshore.

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The peak of Gebel Shubra Wit (Ghebrewet) (Lat. 21° 18' N., Long. 32° 17' E.), 725 feet (221^m0) high, lies about 2½ miles south-westward of the middle of the south-western side of the lake. The Canal at the northern end of the lake is 328 feet (100^m0) wide, and the channel through the lake had, in 1936, been dredged to a least depth of 36 feet (11^m0).

Chart 233.

Buoyage.—**Beacons.**—The Canal at the northern end of the lake is marked by two pairs of light-buoys, each of the eastern buoys exhibiting a *green fixed* light, and each of the western buoys a *red fixed* light.

A light-buoy, exhibiting a *white occulting* light, is moored in the lake about 2 miles from the Canal entrance at the north end of the lake and on the line of its axis. A similar buoy is moored 1½ miles from the Canal entrance at the southern end of the lake, at an angle of 28° northward of the line of its axis. These buoys are 4½ miles apart, and are known as the North and South light-buoys. Northbound vessels pass eastward and southbound vessels westward of both these light-buoys.

A white conical buoy is moored in a depth of 6 fathoms (11^m0), 8 cables east-north-eastward of the North light-buoy.

The Canal entrance at the southern end of the lake is marked by two pairs of light-buoys. The north-eastern buoy of the north-western pair exhibits a *green flashing* light and the south-western buoy a *red flashing* light; the northern buoy of the south-eastern pair exhibits a *green fixed* light and the southern buoy a *red fixed* light. There are three beacons situated close north-eastward of these light-buoys.

Caution.—The buoys are liable to be moved without previous notice.

Anchorage.—Vessels which have to wait in the Great Bitter lake for the order to enter the Canal northward or southward of that lake, should anchor between North or South light-buoy and the entrance to the Canal. When anchoring near the southern entrance vessels should

Charts 8a, 2523.

Chart 233.

keep northward of the line of the axis of the Canal, to avoid the bank which extends off the southern shore.

Little Bitter lake.—From the southern end of the Great Bitter lake the Canal, which here has a width of 328 feet (100^m0), trends east-south-eastward, and enters the Little Bitter lake at the point on which stands Kabret signal station.

The depths in the Little Bitter lake are less than 17 feet (5^m2), and the Canal has been dredged through it. The northern curve begins about one mile eastward of Kabret signal station (*Lat.* 30° 16' N., *Long.* 32° 30' E.) and is about 12 cables long; from the southern end of this curve the Canal trends 2½ miles south-south-eastward to the southern curve, which is about 7 cables long. From the southern end of the southern curve the Canal trends 1½ miles southward to the southern end of the lake, and a mole extends about one mile northward on the western side of the Canal at its junction with the lake.

There are mooring bollards on each side of the Canal.

The sides of the Canal are of a very sticky mud, and in case of grounding, vessels take some time to get off. Vessels of less than 16 feet (4^m9) draught should not moor in Little Bitter lake as, their draught being about the same as the depths outside the Canal, they risk grounding whilst mooring.

Buoyage.—Beacons.—A pair of light-buoys, the northern one exhibiting a *green fixed* light, and the southern one a *red fixed* light are moored about 1½ miles westward of Kabret signal station. Between this pair of light-buoys, and the light-buoys marking the entrance to the Canal at the southern end of the Great Bitter lake, the Canal is marked on each side by conical buoys, outside which is a line of beacons, those on the northern side are surmounted by triangles, and those on the southern side by spheres.

A light-buoy, exhibiting a *green fixed* light, is moored on the northern side of the channel about one cable northward of Kabret signal station; thence, the channel through the Little Bitter lake is marked by ten pairs of light-buoys, the north-eastern and eastern buoys each exhibiting a *green fixed* and the south-western and western buoys a *red fixed* light.

Charts 3214, 734, 233.

Little Bitter lake to Suez bay.—From the southern end of the Little Bitter lake the Canal trends about 6 miles southward, when it turns 8° eastward, and continues straight for 5 miles; it then curves gradually south-westward for a distance of 3½ miles into Suez bay, which it enters, passing westward of Qad el Marâkib (Kad el Marakeb); Qad el Marâkib is a low sandy point covered at high water; a sandbank, which dries, extends about half a mile westward and south-westward of it. This part of the Canal passes through hard, and in places rocky, ground. The rocky places, where vessels should not secure to the banks, are marked by can buoys, and red posts on the banks.

A breakwater extends across the bank on the south-eastern side of the southern entrance to the Canal, just within Qad el Marâkib.

Chart 734.

Light-buoys.—Two light-buoys, each exhibiting a *red fixed* light, are moored on the north-western side of the Canal, abreast the entrance to Suez creek.

Chart 233.

Currents and tidal streams.—From November to April the

Charts 757, 8a, 2523.

Chart 233.

general set of the current between Port Said (*Lat.* $31^{\circ} 16' N.$, *Long.* $32^{\circ} 19' E.$) and the Great Bitter lake is northward, and from June to October southward. The rate of the current depends upon any variation in the height of the sea level in the Mediterranean, which may increase or change the direction of the periodical Canal current. The average rate of the current is seldom more than one knot, though it varies from half a knot to 2 knots, but it lessens towards the Great Bitter lake. There are no perceptible tidal streams between Port Said and Lake Timsah, neither are there any in either Lake Timsah or the Great Bitter lake.

The River Nile falls from November to April, and rises from June to October; these periods coincide with those of the currents in the Canal here described, but there is not sufficient evidence to prove that the currents are caused by the rise and fall of that river.

That there is at times an interchange of water between the Canal and Lake Manzala is indicated by the fact that in October, when, due to the overflowing of the Nile, the lake is at its highest and its water freshest, the water in the Canal for about 24 miles from Port Said, or to Qantara, is not so salt as that in the Mediterranean. From Qantara to one mile or so from the entrance to the Great Bitter Lake, the density in October is only a little above that of ordinary sea water.

In April, when Lake Manzala is low and salt, the water in the Canal, northward of the Bitter lakes is much saltier than ordinary sea water, and even equals in density that of the Bitter lakes until about 7 miles from Port Said, when there is a sudden decrease in the saltiness of the water, and it becomes of the same density as that in the Mediterranean.

In December, 1900, the density of the water at Port Said was 1.027; at Ismailia 1.038; and at Suez 1.031.

Between Port Taufiq (Thewfik), the name given to that part of the Suez canal for about one mile within its southern entrance, and the southern end of the Little Bitter lake, the tidal stream sets northward from about 2 hours before until about 5 hours after high water, and southward from about 5 hours after until about 2 hours before high water. The tidal streams attain their greatest rate, about $1\frac{1}{2}$ knots, near Madama, about 7 miles within the southern entrance to the Canal. At full and change, the streams set northward from about Xh. 00m. to Vh. 00m., and southward from about Vh. 00m. to Xh. 00m., in the southern and northern entrances, respectively, to the Canal, and gradually turn later until at the southern entrance to the Little Bitter lake they turn about 50 minutes later. During strong southerly winds the north-going stream attains a rate of $2\frac{1}{2}$ knots at springs.

The stream near the bed of the Canal turns from 5 to 10 minutes earlier than at the surface.

The unvarying level of the water in the Little Bitter lake is the cause of the lateness of the beginning of the north-going stream at the southern entrance to this lake. That stream cannot begin to run until the depth at the entrance has risen above the level of the lakes, some 2 hours before high water; it then begins and continues during the latter part of the tidal rise and until the depth at the entrance has fallen below the level of the Little Bitter lake (*Lat.* $30^{\circ} 13' N.$, *Long.* $32^{\circ} 31' E.$).

With a strong southerly wind in Suez bay the sea level rises from 8 to 9 feet (2^{m4} to 2^{m7}), which affects the streams in the Canal to some extent.

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Chart 233.

In passing the mouth of Suez creek, vessels should guard against the strong tidal stream setting across the Canal, frequently in the contrary direction to the stream of the Canal.

- 5 **Tides.**—There is no perceptible tide in the Canal from Port Said to and including the Bitter lakes. At springs the tide rises 6 inches (0^m2) at the southern entrance to the Little Bitter lake, 1½ feet (0^m5) at Shallufa (Chalouf) (mile 79), 2 feet (0^m6) at Madama (mile 81), and 7 feet (2^m1) in the southern entrance. At the southern entrance to
10 the Little Bitter lake it is high water about 50 minutes later than at Suez.

Directions.—It is deepest in the middle of the Canal throughout its length; in passing through it is therefore more a question of careful steering to keep the ship exactly in the middle than of pilotage, and as
15 the captain probably knows how to manage his vessel better than the pilot he is held responsible for it. The closest attention is required to the steering so that only a small amount of helm is used.

The beacons in the several lakes are placed on either side of the deep channel. Over the greater part of the Canal the channel is marked by
20 buoys.

When two vessels proceeding in an opposite direction are in sight of each other, they must both decrease their speed and close the shore nearest to their starboard side, or stop if so required by the pilot. Attention must also be paid to the signals to “gare” which may be
25 made from the various stations along the banks.

Vessels proceeding in the same direction may pass each other in Great Bitter lake (*Lat.* 30° 20' N., *Long.* 32° 23' E.) without asking permission, and may, if the Canal is free from obstruction, re-enter it in the order in which they arrive, but should they have to stop from
30 any cause before re-entering they must proceed in the order in which they entered the lake from the Canal.

In the pilotage of a steam vessel the principal point requiring attention is the speed, and it must be borne in mind that the maximum speed allowed is 7½ knots. If a vessel, that under ordinary circum-
35 stances steers well, steers badly on entering the Canal it is probable that the right speed has not been found, and that, on account of the natural desire to get on quickly, she is going too fast; the speed in this case should be reduced until she steers better.

In passing from a wide into a narrower part of the Canal the same
40 speed cannot be preserved at the same time with good steerage, and it then becomes necessary to go slower.

As regards speed, it may be stated that each vessel has her “canal temper,” meaning thereby a speed suitable to the size of the vessel at which she steers best. It may also be remarked that there is a certain
45 speed attainable by each vessel in the Canal which she will not exceed, no matter how much the speed of the engines is increased. This is owing to the large displacement of water as compared with the width and depth of the canal, and of course does not affect a vessel so much in the lakes.

50 The greatest caution is necessary when passing through a curve in the Canal in very long vessels, and there should be a tug towing ahead. The engines should be stopped or going as slowly as possible, and particular attention is required, especially in a vessel with twin screws, to the proximity of the outer propeller to the banks.

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Chart 233.

In passing canal dredgers hauled to the banks, and also vessels gared up, great caution is required; the speed should be very slow, for the reaction of the waves caused by the vessel, even if she is going at a moderate speed, is liable to carry away the hawsers of the stationary vessels, which might then foul the passing vessel. 5

All vessels should be steered from the bridge, the captain and the pilot, if possible, being close to the helmsman.

The only serious damage vessels are liable to sustain in passing through the Canal is from the propeller coming in contact with the bank; when the wind blows across the Canal care must be taken to prevent the vessel drifting to leeward, and all the upper gear, that can be lowered, should be sent down. It is better to stop and secure to the bollards than to risk damaging the propeller by using it near the lee bank. With the wind abeam care is required in getting under way after having gared up to prevent the vessel drifting on the lee bank. Hawsers for Canal work should be fitted with spliced eyes. 10 15

The most difficult part of the Canal passage, leaving the effect of a strong wind out of consideration, is between the Little Bitter lake and Suez, on account of the tidal streams prevailing there. In this part of the Canal vessels proceeding with the tidal stream have the right of way, so that vessels proceeding against the tidal stream always have to gare up when meeting other vessels. In the case of vessels which for any reason (such as propellers projecting from the sides of the vessel) it is not desirable to gare up, it is advantageous to traverse this part of the Canal with a following stream. 20 25

Vessels can anchor in Lake Timsah (*Lat. 30° 35' N., Long. 32° 18' E.*) and in the Great Bitter lake.

Chart 734.

Suez creek.—Light.—Suez creek, the entrance to which is on the north-western side of the Canal, about $1\frac{1}{2}$ miles north-north-eastward of Qad el Marâkib (page 76), leads to Suez; the channel in it is about 300 feet (91^m₄) wide, with depths of from one to 5 feet (0^m₃ to 1^m₅), and is bordered on each side by mud flats, which partially dry. 30

A light is exhibited, at an elevation of 20 feet (6^m₁), from an iron beacon, situated in depths of from one to 2 feet (0^m₃ to 0^m₆) on the eastern side of the fairway, $2\frac{1}{4}$ miles northward of Qad el Marâkib. 35

There is a basin on the eastern side, close within the entrance to Suez creek.

Suez.—The town of Suez stands on the south-western side of the creek, near the head of Suez bay. Government house has a conspicuous dome. British Consular officers reside here. 40

There are three hospitals here, the French hospital belonging to the Suez Canal Company, the Fever hospital and the Government hospital; the latter is a conspicuous square stone building with outbuildings near it. 45

The population of Suez and Port Taufiq, in 1937, amounted to 49,686.

Deratisation can be carried out, *see* page 20.

For Meteorological tables, *see* page 48.

Communications.—Suez is connected to the Egyptian railway system. 50

Suez is connected to the general telegraph system.

There is frequent steamer communication with all parts of the world.

Charts 233, 757, 8a, 2523.

Chart 3214.

Port Taufiq.—Port Taufiq (Thewfik) is the name given to that part of the Suez canal for about one mile within its southern entrance, including the basin mentioned below. The Company's office and
 5 signal station are near the middle of Port Taufiq gare, on the north-western side of the Canal and about $4\frac{1}{2}$ cables south-westward of the western entrance point of Suez creek. The War memorial, a white stone obelisk, 66 feet (20^m1) in height, at the base of which are two Nubian lions, stands on the north-western side of the entrance to the
 10 Canal.

The Company's southern basin lies on the north-western side of the Canal at the northern end of Port Taufiq gare. It has depths of 19 feet (5^m8) in the southern part, and of 16 feet (4^m9) in the remainder.

Coaling is carried on more conveniently in Port Taufiq than in
 15 Suez bay.

For Port Ibrâhîm (*Lat. 29° 56' N., Long. 32° 33' E.*) see page 86.

Light-buoys.—**Lights.**—The southern entrance to the Canal is marked by a pair of light-buoys, 800 feet (243^m8) apart, between which vessels must pass when entering or leaving the Canal ; the north-western
 20 buoy of the pair lies about $7\frac{1}{2}$ cables south-westward of the War memorial. The south-eastern buoy exhibits a *green fixed* light, and the north-western buoy a *red fixed* light.

A pair of light-buoys, the south-eastern buoy exhibiting a *green fixed* light and the north-western a *red fixed* light, marking the deep channel,
 25 is moored abreast the War memorial.

Signal lights are occasionally exhibited from a mast in front of the Company's offices, for aiding navigation in the Canal at night.

Caution.—In thick or hazy weather vessels must be careful not to mistake the lights at the entrance to Port Ibrâhîm (page 85) for
 30 those at the Canal entrance.

Mooring buoys.—There are six sets of mooring buoys on the south-eastern side of the Canal abreast Port Taufiq gare ; the distance between the buoys varies from 720 to 590 feet (219^m5 to 179^m8). There is a line of piles on the south-eastern side of the Canal for securing
 35 breast ropes. A small black and white conical buoy is placed in a depth of 25 feet (7^m6), between each set of moorings.

Vessels of deep draught and great beam should not use the north-eastern set of moorings, as the north-east-going tidal stream there sets towards the south-eastern shore. Vessels are allotted berths by the
 40 Company's officials, and those at the moorings must not get under way for the roads until they have received a verbal order from the Harbour master.

Chart 734.

SUEZ BAY.—**Aspect.**—Suez bay, known to the Arabs as Bahr
 45 Qulzum, the northern part of the Gulf of Suez, extends about $4\frac{1}{2}$ miles southward from its head and is entered between Ras el Adabîya and a point about $4\frac{1}{2}$ miles east-north-eastward and situated $1\frac{1}{2}$ miles south-eastward of Qad el Marâkib (page 76) ; the south-western and western sides of the bay are bordered by reefs and banks, extending in
 50 places to as far as one mile offshore.

Charts 734, 757.

The shores of the bay are low, except the south-western and western sides, which rise steeply to Gebel 'Atâqa, a conspicuous range attaining

Charts 734, 233, 757, 8a, 2523.

Charts 734, 757.

an elevation of 2,725 feet (830^m6) about 8 miles westward of the town of Suez. On the northern side of the bay is a desert plain, and on the eastern side a plain, largely covered with sand, extends about 12 miles inland in a south-easterly direction and rises very gradually to hills of moderate elevation. 5

Chart 734.

Ras el Adabiya, a low sandy spit, extending about 6 cables north-north-eastward from the coast, is fringed by the coastal bank, which extends about 6½ cables north-eastward, 8½ cables northward, and one 10 mile north-westward of it; this bank, the inner part of which dries, has depths of less than 3 fathoms (5^m5) over it.

Qad el Marâkib (*Lat.* 29° 55' N., *Long.* 32° 34' E.) is described on page 76; a small coral patch, which dries, lies 7 cables south-south-westward, and another, which also dries, lies 8 cables southward of 15 Qad el Marâkib.

Port Ibrâhîm and El Mîna el Gedîda (New Port) lie at the head of the bay, north-westward of the Canal entrance.

Local weather.—See page 37.

Caution.—On account of the number of coral patches off-lying the 20 shores of Suez bay no vessel should approach the coast in this area without local knowledge.

Buoyage.—In Suez bay, approaching from southward, buoys on the starboard side of the channel are conical and painted red, and buoys on the port side are either can or barrel-shaped and painted black. 25

Buoys marking middle grounds or the ends of spits, and telegraph buoys are painted black and white in vertical stripes.

Buoys marking wrecks or the extensions of harbour works are painted green.

Dangers near the fairway.—**Light-buoys.**—**Lights.**—**Fog signal.**—Between the coastal bank extending north-eastward from Ras el Adabiya and the coastal bank extending south-westward from the eastern entrance point of the bay is a flat, with a least depth of 3½ fathoms (6^m4), through the centre of which there is a dredged 35 channel (page 83).

A 3½-fathom (6^m4) shoal lies in the southern approach to this channel, about 2½ miles eastward of Ras el Adabiya, and is marked by a light-buoy exhibiting a *green flashing* light; some shoal patches, with depths of from 1½ to 4 fathoms (2^m3 to 7^m3), are situated on the eastern side of this approach, about 2½ miles south-westward of the eastern 40 entrance point.

Newport rock, a small knoll of soft mud, about 2½ miles east-north-eastward of Ras el Adabiya, has a least depth of 2½ fathoms (4^m1) over it, and is marked by a light-tower. See sketch on chart.

A light is exhibited, at an elevation of 43 feet (13^m1), from a 45 cylindrical tower above a circular dwelling on iron piles, situated on Newport rock. A fog signal is sounded from this light-structure.

Qal'a Kebîra (Kal ah Kebîreh), a coral reef about 2 miles west-south-westward of Qad el Marâkib, dries about 2 feet (0^m6); blocks of stone near its southern end cover at high water, and rubble near its northern 50 end dries about 6 feet (1^m8); some of the outer rocks are marked by poles about 2 feet (0^m6) high. Between Qal'a Kebîra and the sandbank extending south-westward of Qad el Marâkib is a shallow flat, through which a channel (page 83) has been dredged.

Charts 233, 757, 8a, 2523.

Chart 734.

A light-buoy, exhibiting a *red flashing light every three seconds*, is moored about 2 cables south-south-eastward of Qal'a Kebîra.

A light, situated on Qal'a Kebîra, is exhibited at an elevation of 5 60 feet (18^m3).

A shoal, with a least depth of 2 fathoms (3^m7), is situated about 3 cables westward of the northern end of Qal'a Kebîra, and is marked by a red iron framework light-beacon, named West beacon (*Lat. 29° 55' N., Long. 32° 31' E.*); shoal patches, with a depth of less than 10 6 feet (1^m8), lie from 1½ to 4 cables northward of the northern end of Qal'a Kebîra, and are marked at their northern end by a light-buoy, painted red, exhibiting a *green flashing light every three seconds*.

Two lights, disposed vertically, are exhibited, at elevations of 30 and 42 feet (9^m1 and 12^m8), respectively, from West beacon.

15 A channel (page 83) to the southern entrance of the Canal has been dredged through the coastal bank in the north-eastern corner of the bay; on this bank, in the approach to Port Ibrâhîm, are some detached shoals with a least depth of 2½ fathoms (5^m0).

A wreck, of which the funnel was showing in 1941, lies 1½ miles 20 north-eastward of West light-beacon, and is marked by a light-buoy exhibiting a *white flashing light every three seconds*.

Dangers on western side of Suez bay.—Beacons.—Buoys.—Adabiya bay, north-westward of Ras el Adabiya, is encumbered with rocks and shoals, only the more important of which are described 25 below; its southern and western shores are fringed with coral reef.

A pair of beacons, each surmounted by a diamond, stands on the south-western shore of Adabiya bay, about 2 miles westward of Ras el Adabiya; these beacons, when in line, bear 242½°.

A conspicuous black water-tower is situated on the western side of 30 Adabiya bay, about one mile north-north-westward of the pair of beacons just described, and a similar tower is situated about 2 miles farther north-north-westward.

Mensiya reef, situated on the northern edge of the coastal bank extending northward of Ras el Adabiya and 8 cables north-north- 35 westward of that point, dries, and is marked by a beacon, consisting of a red iron tripod and a pole, surmounted by a square, 15 feet (4^m6) in height; Atâqa reef, lying 1½ miles north-westward of Ras el Adabiya and one mile offshore, dries, and is marked by a similar beacon.

A 2½-fathom (5^m0) shoal, situated about one mile north-westward of 40 'Atâqa reef beacon and 7 cables offshore, is marked by a red conical buoy; a reef, which dries, lies about 2½ cables northward of this shoal.

Several shoal patches, with depths of from one to 3 fathoms (1^m8 to 5^m5), the positions of which can best be seen on the chart, lie as much 45 as 6 cables from the south-western shore of Adabiya bay; some of these shoals are marked by red conical buoys.

A wreck, of which the mast and funnel were showing in 1941, lies about 1½ miles north-north-eastward of 'Atâqa reef beacon.

Etuleh shoals, lying about 1½ miles west-north-westward of West 50 beacon and as much as 1½ miles offshore from the north-western side of the bay, consist of some coral reefs, which dry, and of several shoals.

A pair of beacons, 20 feet (6^m1) in height, each painted black and surmounted by a white diamond, stands on the north-western shore of

Chart 734.

Suez bay, about $2\frac{3}{4}$ miles west-north-westward of West beacon ; these beacons, when in line, bearing 302° , lead towards the north-western part of the bay, passing south-westward of Qal'a Kebîra and Etuleh shoals.

Channels.—Beacon.—Light-buoys.—A channel, with a least depth of 38 feet (11^m6), in 1944, has been dredged through the flat close westward of Newport rock (*Lat. $29^\circ 53' N.$, Long. $32^\circ 33' E.$*) ; it is about 2 cables wide and its axis runs 355° and 175° .

A light-buoy, exhibiting a *white flashing* light, is moored on the western side of the southern entrance to this dredged channel, about one mile southward of Newport rock light-tower ; a light-buoy, painted red and exhibiting a *white flashing* light *every three seconds*, is moored on the western side of the dredged channel, one mile northward of the light-buoy at its southern entrance.

A channel, from about $1\frac{1}{2}$ to 2 cables wide, with depths of $37\frac{3}{4}$ feet (11^m5), in 1934, has been dredged in a north-north-easterly direction through the shallow flat between Qal'a Kebîra and Qad el Marâkib, and connects Suez bay with the Suez canal.

The south-western end of this channel is marked by two light-buoys, the eastern, named the East Spit buoy, is painted black, numbered " 1 " in white, surmounted by a cone, and exhibits a *green flashing* light *every two seconds*, and the western, known as the West Spit buoy, is painted red, numbered " 4 " in white, surmounted by a cylinder, and exhibits a *red flashing* light *every two seconds*.

A framework beacon stands close eastward of the eastern side of the dredged channel, about $7\frac{1}{2}$ cables west-south-westward of Qad el Marâkib.

Prohibited anchorages.—Submarine telegraph cables.—Buoys.—Owing to the existence of submarine telegraph cables anchorage is prohibited in the area, shown by pecked lines on the chart, in the northern part of Suez bay.

A red spherical buoy, marked " Cable," and surmounted by a notice board, is moored about one mile northward of West beacon, and a similar buoy is moored about one mile further westward.

Anchorage is also prohibited eastward of a line joining the West Spit light-buoy and the western light-buoy of the outer pair marking the entrance to the Canal, in an area shown by pecked lines on the chart.

Anchorages.—Adabiya bay affords good and almost landlocked anchorage, about $1\frac{1}{2}$ miles west-north-westward of Ras el Adabiya, in depths of from $4\frac{1}{2}$ to 8 fathoms (8^m2 to 14^m6), mud.

Anchorage in the northern part of Suez bay is well sheltered from all except southerly winds, which may be frequent in winter, and are usually accompanied by a heavy sea. When anchoring, the entrance to the North and South basins at Port Ibrâhîm should not be brought to bear more than 066° as the holding ground northward is bad ; a good berth is, in a depth of about $5\frac{3}{4}$ fathoms (10^m5), stiff clay and good holding ground, with West beacon bearing about 239° and the north-western end of the breakwater extending west-north-westward of Qad el Marâkib, bearing 090° .

Anchorage may also be obtained in depths of about $3\frac{1}{2}$ fathoms (6^m4), mud, off Port Ibrâhîm (*Lat. $29^\circ 56' N.$, Long. $32^\circ 33' E.$*) and clear of the traffic.

Directions.—Suez canal to Gulf of Suez.—The lights and light-

Charts 233, 757, 8a, 2523.

Chart 734.

buoys described on pages 81, 82, and 83 are, at times, difficult to identify, especially if there is much shipping in the bay.

A vessel outward bound from the Canal should, from between the
5 outer light-buoys at its southern entrance, proceed through the dredged channel, passing between the East and West Spit light-buoys. A vessel should continue southward and pass through the dredged channel westward of Newport rock, and westward of the light-buoy marking the $3\frac{1}{2}$ -fathom (6^m4) patch; thence she should proceed southward
10 into the Gulf of Suez.

From the northern part of Suez bay a vessel can pass northward, westward, and southward of Qal'a Kebîra, and thence through the dredged channel westward of Newport rock, as directed above.

Chart 3214.

15 **Port Ibrâhîm and El Mîna el Gedîda.**—Port Ibrâhîm is the port of Suez. It consists of North and South basins, which are separated by a central mole extending in a west-south-westerly direction from its north-eastern end.

The entrance channel to this port was, in 1935, being dredged to
20 a depth of 28 feet (8^m5); there were depths, in 1940, of from 22 to 30 feet (6^m7 to 9^m1) in North basin, and of from 20 to 28 feet (6^m1 to 8^m5) in South basin, except at its north-eastern end near the dry dock where there were depths of from 8 to 18 feet (2^m4 to 3^m5), soft mud over rock, and of from 17 to 21 feet (5^m2 to 6^m4) immediately in front of the
25 dock entrance.

There are some mooring buoys in the basins.

Small local steam vessels lie alongside in South basin and other vessels anchor or make fast to the mooring buoys, hauling their sterns to bollards on the quays; it is not safe for vessels without local know-
30 ledge to moor alongside. Permission to enter either basin must be obtained from the Captain of the Port at the Egyptian Port office, which is situated at the outer end of South quay.

Charts 3214, 734.

El Mîna el Gedîda, close west-north-westward of Port Ibrâhîm, is
35 formed by a detached breakwater extending $5\frac{1}{2}$ cables westward from a position about one cable westward of the head of the southern entrance mole at Port Ibrâhîm and another breakwater extending about one mile south-eastward from the coast south-westward of Suez to within about 3 cables north-westward of the western end of the detached break-
40 water; the entrance between the two breakwaters is 1,460 feet (445^m0) wide, with depths, in 1936, of 29 feet (8^m8). The Petroleum basin lies at the north-western end of El Mîna el Gedîda; the entrance to this basin is 328 feet (100^m0) in width, with depths, in 1935, of 30 feet (9^m1). A conspicuous chimney (*Lat.* $29^\circ 58' N.$, *Long.* $32^\circ 32' E.$), 230 feet
45 (70^m1) in height, is situated about half a mile northward of the Petroleum basin.

Pilotage.—Pilotage is compulsory for merchant vessels, with the exception of those of 100 tons and under, and of coasting vessels working in the Red sea.

Chart 3214.

Signal station.—A signal station is situated $1\frac{1}{2}$ cables south-eastward of the western end of the southern mole at the entrance to Port Ibrâhîm.

Storm signal.—During southerly gales, which occur from October

Charts 734, 233, 757, 8a, 2523.

Charts 3214.

to March, a black flag is displayed from near the western end of the southern mole at the entrance to Port Ibrâhîm.

Chart 734.

Lights.—A light is exhibited, at an elevation of 26 feet (7^m9), 5
from a beacon, situated on the western end of the detached breakwater.

Chart 3214.

A light is exhibited, at an elevation of 27 feet (8^m2), from the head of the southern mole at the entrance to Port Ibrâhîm. 10

A light is exhibited, at an elevation of 27 feet (8^m2), from the head of the northern mole at the entrance to Port Ibrâhîm.

A light, situated near the south-western end of the central mole in Port Ibrâhîm, is exhibited at an elevation of 27 feet (8^m2).

Chart 734.

A light is exhibited at the southern end of the eastern mole of the Petroleum basin, 7 cables north-north-westward of the south-eastern end of the north-western breakwater of El Mîna el Gedîda. 15

Leading lights are occasionally exhibited at the head of the Petroleum basin; the front light is exhibited, at an elevation of 23 feet 20
(7^m0), from a mast situated on the shore, about 3 cables north-westward of the light at the entrance to the basin; the rear light consists of two lights, disposed vertically, 6½ feet (2^m0) apart, the elevation of the lower light being 30 feet (11^m0), and are exhibited from a mast situated half a cable north-north-westward of the front light. These lights, 25
when in line, bearing about 328°, lead through the entrance of the Petroleum basin.

Buoyage.—Two buoys, about one cable apart, marking the entrance to the dredged channel, are moored about 6½ cables west-south-westward of the southern mole at the entrance to Port Ibrâhîm; the 30
north-western is a black can buoy and the south-eastern a red conical buoy.

Two pairs of buoys are moored to mark the dredged channel in the approach to El Mîna el Gedîda, those on the south-eastern side of the channel being red conical buoys and those on the north-western 35
side black can buoys; the outer pair lies about 6 cables south-westward of the western end of the detached breakwater (*Lat.* 29° 56' N., *Long.* 32° 33' E.) and the inner pair off the heads of the two breakwaters.

During the extinction of the light at the south-eastern end of the 40
north-western breakwater the north-eastern can buoy exhibits a *red flashing* light.

A light-buoy, surmounted by a cylinder and painted red, exhibiting a *red flashing* light *every two seconds*, is moored about one cable southward of the head of the north-western breakwater of El Mîna 45
el Gedîda.

The dredged channel leading to the Petroleum basin is marked by red conical buoys on its eastern side and by black can buoys on its western side, with a light-buoy, exhibiting a *green flashing* light *every two seconds*, moored about 2½ cables north-north-westward of the head 50
of the north-western breakwater of El Mîna el Gedîda.

Chart 3214.

Quayage.—North quay, on the north-western side of North basin, in Port Ibrâhîm, is built of stone; its south-western section has depths

Charts 734, 233, 757, 8a.

Chart 3214.

of 22 feet (6^m7) alongside and its north-eastern section depths of from 23 to 30 feet (7^m0 to 9^m1). North quay is connected with the railway system.

- 5 Near the middle of the north-western side of the central mole, which is connected with the railway system, is a wooden jetty, 261 feet (79^m5) in length, with depths of from 23 to 29 feet (7^m0 to 8^m5) off it; north-eastward of this jetty several short spurs extend from the mole, with depths of from 19 to 23 feet (5^m8 to 7^m0) outside them; about half
10 a cable south-westward of the wooden jetty the bottom is uneven to a distance of 60 feet (18^m3) from the mole and has depths of from one foot to 17 feet (0^m3 to 5^m2); this uneven ground extends round the end of the central mole and for a distance of about 400 feet (121^m9) along its south-eastern side, where the depths are from 9 to 12 feet
15 (2^m7 to 3^m7). The north-eastern section of the south-eastern side of the central mole has depths of from 21 to 30 feet (6^m4 to 9^m1) alongside, except for its north-eastern end where the depths are less than 18 feet (5^m5).

South quay, on the south-eastern side of South basin, is built of stone
20 and has depths of from 16 to 22 feet (4^m9 to 6^m7) alongside; there is a small jetty about half a cable within its south-western end. South quay is connected with the railway system.

Chart 734.

The Petroleum basin, in El Mīna el Gedīda, has stone quays,
25 1,608 feet (490^m1) in length on its northern side, 1,375 feet (419^m1) in length on its eastern side, and 2,247 feet (684^m9) in length on its western side. There are four concrete jetties for the use of petroleum vessels, two concrete jetties for bunkering purposes, and one concrete jetty, with a depth of 14 feet (4^m3) alongside, for the use of cattle
30 steamers.

Charts 3214, 734.

Directions.—A vessel bound for Port Ibrāhīm (*Lat.* 29° 56' N.,
Long. 32° 33' E.) should approach with the light-beacon on the
35 central mole, bearing 060°, which leads through the dredged channel and between the moles on either side of the entrance.

Port facilities.—Only a small amount of coal is stocked; it is supplied by lighters to vessels at anchor in the roads. Coaling is by means of baskets.

There are large stocks of fuel and diesel oil; vessels can be supplied
40 alongside or by tank barges at a rate of from 150 to 250 tons per hour.

Fresh provisions are plentiful. Water is supplied from water boats and is laid on to the quays.

Large repairs to vessels can be effected.

There are three floating cranes with a maximum lifting capacity of
45 35 tons.

The graving dock is situated at the north-eastern end of South basin; for details, see Appendix I. A slipway adjoins the graving dock.

Trade.—The chief imports are coffee, flour, coal, machinery and grain.

Charts 734, 233, 757, 8a.

CHAPTER III

GULF OF SUEZ

Charts 734, 757.

GULF OF SUEZ.—The Gulf of Suez, known to the Arabs as Khalig el Suweis, includes the Strait of Gûbal (Jubal), and extends about 175 miles south-south-eastward from the town of Suez to the south-eastern extremity of Shadwân island. Southward of Suez bay it varies in width from about 10 to 25 miles. It is bordered by high land, in many cases approaching close to the coast, and often affording conspicuous landmarks. Both sides of the gulf are bordered by coral reefs, which, on the eastern side more particularly, extend a considerable distance offshore. In the Strait of Gûbal, the name given to the south-eastern end of the Gulf of Suez, and in the gulf generally, there are outlying patches. 5 10

With a strong north-westerly wind in the gulf, it is usually calm in the bay southward of Gebel 'Atâqa. At Suez the northerly wind usually freshens late in the afternoon and continues until midnight. 15
See also page 37.

For Meteorological tables, *see* page 48.

Local weather.—*See* page 37.

Tides and tidal streams.—High water occurs almost simultaneously in the gulf, between Suez and Ras Ghârib (*Lat.* $28^{\circ} 21' N.$, *Long.* $33^{\circ} 06' E.$), but in the southern part of the gulf it is high water when it is low water at Suez, and vice versa. 20

The tidal streams set northward throughout the gulf while the tide is rising at Suez and southward while it is falling there. Both streams set fairly in mid-channel, with a maximum rate of $1\frac{1}{2}$ knots at springs and of half a knot at neaps, except near Ras Abu Darag (Abu Deraï), on the western side of the gulf, about 36 miles southward of Suez, near the Sherâtib shoals, on the eastern side of the gulf, 88 miles south-south-eastward of Suez, and off the islands in the Strait of Gûbal, where the direction is uncertain. In the Strait of Gûbal, the streams attain a rate of from $1\frac{1}{2}$ to 2 knots, and set northward longer than southward, but in the vicinity of the reefs they frequently set towards them. 25 30

Anchorage.—There are many anchorages in the Gulf of Suez convenient for sailing vessels, or small steam vessels, in bad weather, but as they are all near reefs, caution is necessary when approaching 35

Charts 8a, 2523.

Charts 734, 757.

them; the sun should be astern, and a look-out kept from the mast-head. When anchoring during a north-westerly wind, it is advisable to keep a moderate distance offshore, as a shift of wind is often sudden and unexpected.

WESTERN SIDE.—Ras el Adabiya to Ras Za'farāna.—

Aspect.—From Ras el Adabiya (page 81) the coast trends in a south-south-westerly direction for about 19 miles and thence in a south-easterly direction for about 18 miles to Ras Abu Darag (*Lat. 29° 23' N., Long. 32° 33' E.*). In the southern part of the bay thus formed the coast is backed by Gebel el Qalāla el Bahriya, a range extending about 2 miles inland and attaining elevations of from 1,550 to 2,960 feet (472^m4 to 902^m2); about 2 miles north-westward of Ras Abu Darag this range turns south-westward and, its summit, 15 10 miles west-south-westward from the cape, is 4,250 feet (1,295^m4) high.

Chart 757.

From Ras Abu Darag to Ras Za'farāna, about 17 miles south-south-eastward, the land rises gradually westward and is of a sandy appearance.

Off-lying dangers.—Beacon.—Clearing marks.—Strickland shoal, situated about 12 miles south-south-westward of Ras el Adabiya and 1½ miles offshore, has a depth of 2½ fathoms (5^m0) over it; about three-quarters of a mile westward of this shoal is a rocky patch marked 25 by a beacon.

About 2 miles southward of this beacon and about the same distance offshore is a small reef, which dries, and about a quarter of a mile westward of this reef is a rock, with a depth of less than 6 feet (1^m8) over it.

30 Harris rock, situated about 4 miles southward of the beacon mentioned above and 1½ miles offshore, has a depth of less than 6 feet (1^m8) over it; a small reef, which dries, lies about three-quarters of a mile west-north-westward, and a similar reef about 2 miles south-westward of Harris rock.

35 *Charts 734, 757.*

Coast.—Dangers.—Lights.—Between Ras el Adabiya and Ras Abu Darag the coastal reef extends in places to as much as half a mile offshore.

Chart 757.

40 About half a mile inland and westward of the beacon westward of Strickland shoal is a building.

A light is exhibited, at an elevation of 100 feet (30^m5), from a circular stone tower on a white rectangular dwelling, 46 feet (14^m0) in height, situated on Ras Abu Darag.

45 The coast from Ras Abu Darag to Ras Za'farāna is bordered by coral reefs extending to as much as one mile offshore.

Abu Darag reef, a rocky shallow spit, 2½ miles south-eastward of Ras Abu Darag (*Lat. 29° 23' N., Long. 32° 33' E.*), extends about three-quarters of a mile eastward from the coast, and a similar spit extends 50 about 1½ miles north-eastward of Ras Za'farāna.

A light is exhibited, at an elevation of 83 feet (25^m3), from a white circular stone tower on a white rectangular dwelling, 82 feet (25^m0) in height, situated on Ras Za'farāna. See view on chart.

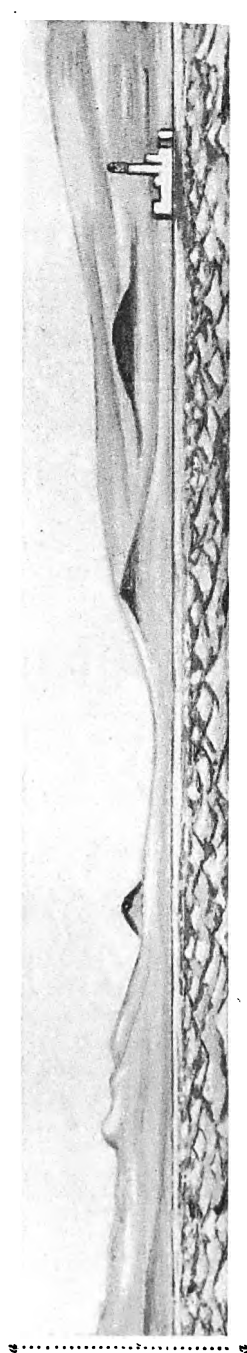
Charts 8a, 2523.



Gebel el Qalila el Qibtiya.

Sharp cone.

Gebel Thelamed.



*Black lava
peak*

*Ras Za'farāna Lt. Ho.,
bearing 235°, distant
1½ miles.*

View, in two parts, of the western side of Gulf of Suez, southward of Ras Za'farāna.
(Original dated 1920.)

To face page 89



4,400 ft. peak.

Gebel Ghârib, bearing
257°, distant 23 miles.

View of western side of Gulf of Suez, southward of Ras Ghârib,
(Original dated 1920.)

Chart 757.

Ras Za'farāna to Ras Ghârib.—Aspect.—From Ras Za'farāna the coast trends about one mile southward and thence 3 miles in a south-westerly direction to the head of Marsa Thelemet (Mersa Thlernel), a bight extending about $1\frac{1}{2}$ miles in a north-north-westerly 5 direction, with a building at its head, whence the coast trends for about 50 miles south-south-eastward to Ras Ghârib. It is backed by an undulating desert plain rising gradually to the bases of the mountains, which lie from about 3 to 20 miles inland. This coast, though slightly indented, is without any prominent points. See view 10 on chart 757.

Gebel Thelemet (Jebel Thlernel), 2,152 feet (655^m9) high, is situated about 8 miles south-westward of Ras Za'farāna and 3 miles inland; it has four knobs on it, and is a good landmark. The high tableland of Gebel el Qalāla el Qiblīya (Jebel Zafarana), which extends south- 15 westward from a position about 16 miles south-westward of Ras Za'farāna, rises, at its northern end to a sharp cone, 4,750 feet (1,447^m8) high; the north-eastern extremity is a conspicuous nipple-shaped hill, 3,622 feet (1,104^m0) high. Gebel Ruâhmīl (Jebel Ruahmi), situated 26 miles southward of the sharp cone mentioned 20 above and 18 miles inland, is rugged-topped, with a sharp conical peak, 3,642 feet (1,110^m1) high, at its southern end. Gebel Ghârib, situated about 18 miles south-westward of Ras Ghârib, is a solitary precipitous peak, 5,740 feet (1,749^m5) high. It can often be seen at night from the gulf, and is a good landmark. See views facing page 25 88 and this page.

Numerous buildings are scattered along the coast for distances of about 3 miles north-north-westward and one mile southward of Ras Ghârib light-structure; there are three tanks close to the light-structure and three conspicuous buildings about 3 miles west-north- 30 westward.

Depths offshore.—The coastal bank, with depths of less than 20 fathoms (36^m6), extends to a distance of about one mile offshore, except about 8 miles north-north-westward of Ras Ghârib, where it extends about three-quarters of a mile offshore. 35

Coast.—Dangers.—Light.—The coast from Ras Za'farāna to Ras Ghârib is fringed by a coral reef which does not extend to more than half a mile offshore, except between Ras Za'farāna and Marsa Thelemet where it extends to as far as about $1\frac{1}{2}$ miles; Marsa Thelemet is about a quarter of a mile wide between the reefs bordering the sides of the 40 bight. The coast between Marsa Thelemet and Ras Ghârib can be approached, with caution, to a distance of $1\frac{1}{2}$ miles.

About 31 miles south-south-eastward of the south-western entrance point of Marsa Thelemet the coast forms a slight bight, of which Ras Abu Bakr (Abu Baka), 34 miles south-south-eastward of the same 45 point, is the south-eastern entrance point; a rock, above water, lies at the edge of the coastal reef extending from Ras Abu Bakr (*Lat. 28° 33' N., Long. 32° 56' E.*).

Chart 757, plan of Ras Gharib anchorage.

A light is exhibited, at an elevation of 165 feet (50^m3), from a red iron 50 tripod on a masonry base, 180 feet (54^m9) in height, situated on Ras Ghârib. See view on chart.

Chart 757.

Anchorage.—Beacons.—Anchorage can be obtained by small

Charts 757, 8a, 2523.

Chart 757.

vessels with local knowledge at several places southward of the coastal reef to the south of Ras Za'farāna. The best berth is with Ras Za'farāna light-tower, bearing about 320° , distant $1\frac{1}{2}$ miles; it was reported, in 1931, that the depths at this anchorage had decreased to $3\frac{1}{2}$ fathoms (6^m4).

The anchorage in Marsa Thelemet is good, but caution is necessary to avoid the reefs; two leading beacons have been erected. The rear beacon is situated about $1\frac{1}{2}$ cables in rear of the building at the head of this bight, at an elevation of about 35 feet (10^m7), and is surmounted by a triangle, point up; the front beacon is situated in front of this building, at an elevation of about 15 feet (4^m6), and is surmounted by a triangle, point down. These beacons, in line, bearing 302° , lead into the entrance; when inside the reef, vessels should alter course northward, and anchor, in a depth of about 5 fathoms (9^m1), eastward of the building mentioned. Should these beacons not be seen, a conspicuous peak at the northern end of the hills behind the building, in line with the middle of the building, leads into the entrance on the same course.

The bight, of which Ras Abu Bakr is the south-eastern point, affords good anchorage, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), sheltered from southerly winds, with the sharp conical peak of Gebel Ruāhmil, bearing 255° , distant 18 miles.

Chart 757, with plan of Ras Gharib anchorage.

Ras Ghârib anchorage, south-eastward of the cape, is fairly well sheltered, but a heavy swell round the cape is experienced at times. Vessels can obtain anchorage in depths of about 5 fathoms (9^m1); the north-going tidal stream is strong and vessels usually lie broadside on to northerly winds. The depths decrease gradually towards the shore.

A stranded wreck lies 7 cables south-eastward of Ras Ghârib light-structure.

Two jetties, half a cable and $1\frac{1}{2}$ cables, respectively, southward of Ras Ghârib light-structure (*Lat. $28^\circ 21' N.$, Long. $33^\circ 06' E.$*), extend a short distance from the coast.

Two pairs of leading beacons have been established, each beacon consisting of a square wooden base surmounted by a large cask on which is a staff about 8 feet (2^m4) in height, the whole beacon being about 16 feet (4^m9) in height. The two northern beacons are painted white with a black vertical stripe; the front beacon of this pair is situated about a quarter of a cable west-south-westward of the inner end of the northern jetty, and the rear beacon, at an elevation of 30 feet (9^m1), about $1\frac{1}{2}$ cables, 317° from the front beacon. The rear beacon of the southern pair is painted red, and is situated, at an elevation of about 200 feet (61^m0), on the crest of the sandhills, about $3\frac{1}{2}$ cables south-south-westward of the rear beacon of the northern pair; the front beacon of the southern pair is painted white with a black vertical stripe, and is situated on the side of a hill about half a cable 095° from the rear beacon. These leading beacons are easily distinguished when approaching from the south.

Two additional pairs of leading beacons have been established; the front beacons are situated $5\frac{1}{2}$ cables and $1\frac{1}{2}$ miles, respectively, southward of Ras Ghârib light-structure; the rear beacons stand $1\frac{1}{2}$ cables west-north-westward and south-westward, respectively, of

Charts 8a, 2523.

Chart 757, with plan of Ras Gharib anchorage.

the front beacons. Of these two pairs of beacons, the northern, when in line, bear 300°, and the southern 226°.

A mooring buoy, for the use of the Anglo-Egyptian-Oilfields Company's vessels, lies about 3 cables east-south-eastward of the head of the northern jetty; other vessels are forbidden to use this buoy or any other in the vicinity. 5

Owing to the existence of pipe lines vessels are warned not to navigate or anchor within the area indicated on the plan by pecked lines.

Charts 2838, 757.

10

Ras Ghârib to Umm El Kimân.—Aspect.—Dangers.—From Ras Ghârib the coast trends in a south-easterly direction for about 25 miles to Ras Dîb (Dhib); it is low and is fringed by a reef. Vessels should not approach the shore to within a distance of $1\frac{1}{2}$ miles or stand into depths of less than 20 fathoms (36^m6). 15

About 13 miles south-eastward of Ras Ghârib lies the north-western entrance point to a bay, of which Ras Shukheir (Shukhair), $2\frac{1}{2}$ miles farther south-eastward, is the south-eastern entrance point; Ras Shukheir rises in gravel cliffs to an elevation of 270 feet (82^m3). 20

Chart 2838.

From Ras Dîb the coast, which is fringed by a reef, trends $14\frac{1}{2}$ miles south-eastward to a point close southward of which lies Umm el Kimân (Umm el Kyaman), a low sandy islet.

Ras Zeit, $7\frac{1}{2}$ miles south-eastward of Ras Dîb, projects but little 25 from the coast.

Zeit hills back the coast between Ras Dîb and Umm el Kimân, lying from about half a mile to one mile inland; the summit of this range, 1,496 feet (456^m0) high, lies about one mile south-westward of Ras Zeit (Lat. 27° 56' N., Long. 33° 31' E.) and slopes seaward; the southern 30 end of the range forms a peninsula. Zeit hills from a distance appear as islets.

Charts 2838, 757.

Westward of Zeit hills the country is an undulating desert plain rising gradually to the base of a range of mountains about 13 miles 35 inland.

Chart 2838.

Umm el Kimân is situated on the southern part of a coral reef, the eastern edge of which is $3\frac{1}{2}$ cables offshore. There is a coastguard station on this islet. 40

See view on chart 757.

Charts 2838, 757.

Outlying banks.—Light-buoy.—Tor bank, the northern end of which is situated about 10 miles eastward of Ras Ghârib, extends for about 12 miles in a south-easterly direction and lies in the fairway of the 45 gulf; it has general depths of from 11 to 19 fathoms (20^m1 to 34^m7), sand and shells, over it; coral patches, with depths of from 3 to 9 fathoms (5^m5 to 16^m5), and the positions of which can best be seen on the chart, lie on this bank.

Moresby shoal, situated at the south-eastern end of Tor bank, about 50 $8\frac{1}{2}$ miles northward of Ras Dîb, has a least depth of 3 fathoms (5^m5) over it, and is marked on its western side by a light-buoy exhibiting a *white flashing light every three seconds*. When proceeding south Ras Ghârib light can generally be seen from aloft until past this shoal; this

Charts 757, 8a, 2523.

Charts 2838, 757.

light should not be brought to bear less than 307° , which bearing leads about $2\frac{1}{2}$ miles south-westward of this danger.

Chart 2838.

- 5 Felix Jones patches, two in number, have each a least depth of 8 fathoms (14^m6), coral; the south-western patch lies about 5 miles north-north-eastward of Ras Zeit, and the north-eastern patch lies about $1\frac{1}{2}$ miles farther to the north-north-east. Although these patches can be clearly seen they may be safely passed over as they have been
- 10 closely examined.

Chart 757.

- Anchorage.**—Anchorage can be obtained in the bay on the north-western side of Ras Shukheir, about three-quarters of a mile offshore, in depths of from 5 to 6 fathoms (9^m1 to 11^m0), sand and coral, with
- 15 Ras Ghârib light-structure, bearing 325° , distant $14\frac{1}{2}$ miles. There are depths of 3 fathoms (5^m5) half a mile offshore in the northern part of this bay and a quarter of a mile offshore in the southern part.

Chart 2838.

- Close south-westward of Umm el Kimân (*Lat.* $27^{\circ} 50' N.$, *Long.* $33^{\circ} 35' E.$) is Marsa Zeitiya; the ruins of several stone buildings lie near the shores of this bight. Anchorage, with shelter from north-westerly winds, in depths of from 5 to 7 fathoms (9^m1 to 12^m8), sand, can be obtained about 3 cables offshore and about the same distance south-south-westward of Umm el Kimân; this is the best anchorage on
- 25 the western side of the gulf, with the exception of that to the south of Ras Za'farâna.

Inside the coastal reef at Marsa Zeitiya is a completely sheltered boat harbour.

Charts 734, 757.

- 30 **EASTERN SIDE.**—Suez bay to Ras Mal'ab.—**Aspect.**—From the eastern entrance point of Suez bay (page 80) the coast trends about 3 miles south-eastward and thence gradually turns southward and south-westward for about $3\frac{1}{2}$ miles to Ras el Misalla (Mesalla), forming a bight called Ghubbet Shad el 'Ayûn; from Ras el Misalla the coast
- 35 trends 7 miles in a south-easterly direction and then about 8 miles southward to Ras el Sudr.

- 'Ayûn Mûsa, the traditional well of Moses, situated about one mile inland from the middle of Ghubbet Shad el 'Ayûn, has a number of palm trees in its vicinity, and there are here numerous houses, gardens
- 40 and springs. This district is very sandy and when a strong southerly wind is blowing the air becomes thick with sand.

Chart 757.

Ras el Sudr and Ras Matarma (Metarma), about 9 miles south-south-eastward, are low and sandy.

- 45 From Ras Matarma the coast has a general south-easterly direction for 18 miles to Ras Mal'ab (Mallap), which is low and sandy.

- Gebel Sinn Bishr, 2,050 feet (624^m8) high, isolated, white, clifty, and conspicuous, is situated about 16 miles east-north-eastward of Ras el Sudr in a break in the apparently table-topped Gebel el Tîh. Gebel el
- 50 Tîh is not the name of a mountain, but of a great tract of high-lying country with a mean elevation of about 1,970 feet (600^m5) above the plain at its base; it terminates southward in a bold escarpment which extends in an irregular line for some two-thirds the distance

Charts 757, 8a, 2523.

Chart 757.

across the peninsula of Sinai, in about lat. $29^{\circ} 10' N.$ Gebel Hammâm Fara'ûn is situated about 3 miles east-south-eastward of Ras Mal'ab ; its western bluff appears as a precipitous cliff, 1,620 feet (493^m8) high, very near the coast, and is conspicuous on south-easterly bearings. 5
Gebel Thâl (Jebel Useit), a sharp peak, 1,696 feet (516^m9) high, and the highest point of the range, stands about 3 miles farther south-eastward.

From Gebel Sinn Bishr to a few miles northward of Gebel Hammâm Fara'ûn, the hills are some distance inland, and have no prominent features. The lower range of Lagya hills near the coast just north-north-westward of Gebel Hammâm Fara'ûn are white and noticeable. 10

Chart 734.

Off-lying dangers.—The dangers in the fairway of the entrance to Suez bay are described on page 81. 15

In the centre of Ghubbet Shad el 'Ayûn, lying from about $1\frac{1}{2}$ to 2 miles offshore, are some shoals, with a least depth of $1\frac{1}{2}$ fathoms (3^m2) ; a shoal, with a least depth of 3 fathoms (5^m5) over it, is situated about 6 cables north-westward of Ras el Misalla (*Lat.* $29^{\circ} 49' N.$, *Long.* $32^{\circ} 36' E.$). 20

Conry rock, situated about $2\frac{1}{2}$ miles west-south-westward of Ras el Misalla, has a least depth of 4 fathoms (7^m3) over it, and a shoal, with a least depth of $3\frac{1}{2}$ fathoms (6^m9), lies about $1\frac{1}{2}$ miles west-south-westward of this cape.

Two shoals, with depths of $2\frac{1}{2}$ fathoms (5^m0) over them, lie $2\frac{1}{2}$ and $2\frac{3}{4}$ miles, respectively, south-south-eastward of Ras el Misalla, and about one mile offshore. 25

Charts 734, 757.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies about $4\frac{1}{2}$ miles south-south-eastward of Ras el Misalla and about one mile offshore. 30

Chart 757.

About $6\frac{1}{2}$ miles northward and $3\frac{1}{2}$ miles north-north-westward of Ras el Sudr and about $1\frac{1}{2}$ miles offshore are two shoals, with depths of 4 and 3 fathoms (7^m3 and 5^m5) over them, respectively ; a small reef, which dries, lies about $2\frac{1}{2}$ miles northward of this cape and about one mile offshore. 35

A coral patch, with a least depth of 6 fathoms (11^m0), lies about $5\frac{1}{2}$ miles north-westward of Ras el Sudr and $4\frac{1}{2}$ miles offshore.

A pinnacle rock, with a depth of 5 fathoms (9^m1), the position of which is approximate, was reported, in 1940, to lie about $4\frac{1}{2}$ miles south-westward of Ras el Sudr. 40

Chart 734.

Coast.—Dangers.—Beacons.—The coast from the eastern entrance point of Suez bay to Ras el Misalla is bordered by sandbanks and coral reefs, and the coastal bank, with depths of less than 3 fathoms (5^m5), extends in places to as much as one mile offshore. 45

Ras el Misalla, from which a coral reef extends 2 cables north-westward, should not be approached within a depth of 20 fathoms (36^m6), which depth may be found about 2 miles from the cape.

From a position about 2 miles south-eastward of Ras el Misalla, Qad el Tawîla (Kad et Towila), a coral reef with depths of from one to 3 feet (0^m3 to 0^m9) over it, extends about $1\frac{1}{2}$ miles west-south-westward from the coast ; it is deep about 2 cables from the western extremity of this reef. 50

Charts 734, 757.

Coral reefs fringe the coast between Qad el Tawîla and Ras el Sudr, and the coastal bank, with depths of less than 3 fathoms (5^m5) over it, extends one mile westward of the cape.

5 Chart 767.

A reef, which dries, extends about half a mile southward of Ras Matarma, and much discoloured water has been observed near this point.

The coast from Ras Matarma to Ras Mal'ab is bordered by reefs
10 extending from about 3 to 8 cables offshore; Qad Mal'ab (Kad Mallap), a coral bank with depths of from 4 feet to 3 fathoms (1^m2 to 5^m5) over it, extends as far as 1½ miles offshore between Ras Mal'ab and Ras Lagya (Legyah), about 3½ miles north-westward.

A beacon, consisting of a metal sheet, is situated on the coast
15 7 miles south-eastward of Ras Matarma (*Lat.* 29° 27' N., *Long.* 32° 43' E.), and a similar beacon 1½ miles southward of the former beacon.
Chart 734.

Anchorage.—Suez quarantine station is situated on the coast, about 1½ miles south-eastward of the eastern entrance point of Suez
20 bay; a pier, with a flagstaff at its head, extends west-south-westward from the coast in this vicinity, and there are two water-towers close north-westward of the root of the pier. The taller of the two towers, 80 feet (24^m4) in height, is conspicuous.

On account of the coral patches vessels without local knowledge
25 should not approach the shores of this bay.

There is anchorage in depths of about 4 fathoms (7^m3) between Ras el Misalla and Qad el Tawîla with the former bearing 346°, distant 6 cables, or in greater depths farther westward.

Chart 757.

30 Ras Mal'ab to Ras Abu Zenîma.—Depths offshore.—Aspect.—From Ras Mal'ab the coast has a south-easterly direction for about 13 miles to Ras Abu Zenîma and is fringed by a reef which extends from about 2 to 8 cables offshore.

Depths of 20 fathoms (36^m6) will be found about 2 miles off Ras
35 Mal'ab, but these depths will be found within about three-quarters of a mile of the coast about 5½ and 8½ miles south-eastward of the cape.

A series of small mountain ranges, mostly of dazzling white chalk, extend, close to the coast, south-eastward of Gebel Hammâm Fara'ûn and Gebel Thâl (page 93).

40 About 10 miles south-eastward of Ras Mal'ab is Gebel Tanka, the western extremity of a range of low hills abutting on the coast and terminating in a scarp about 230 feet (70^m1) high; this range is so close to the coast that the sea washes its base and there is room for a narrow road only. The scarp extends about half a mile north-westward and
45 south-eastward, and its south-eastern end turns slightly inland, breaking up into hills, and leaving a wide plain extending southward to Ras Abu Zenîma. Wadi Tayiba emerges from this range of hills, about 2½ miles north-westward of Ras Abu Zenîma, its mouth being marked by dark basaltic rocks, which are conspicuous amongst the surrounding
50 limestone.

Ras Abu Zenîma is low and composed of gravel.

Anchorage.—Marsa Hammâm, the bight immediately eastward of Ras Mal'ab, affords temporary anchorage, sheltered from north-westerly winds, in depths of from 11 to 12 fathoms (20^m1 to 21^m9), sand, with

Charts 757, 8a, 2523.

Chart 757.

Ras Mal'ab, bearing 317° , distant about 3 cables, but vessels must be prepared to leave immediately should the wind shift.

Chart 757, plan of Abu Zenima bay.

Abu Zenima bay.—Abu Zenima bay, which is entered between 5
Ras Abu Zenima and Cairn point, about $2\frac{1}{4}$ miles east-south-eastward,
has depths of over 10 fathoms (18^m3) about a quarter of a mile offshore,
and is sheltered from north-westerly and northerly winds.

About 6 cables eastward of Ras Abu Zenima (*Lat.* $29^{\circ} 02' N.$, *Long.* $33^{\circ} 06' E.$) are the offices, storehouses and loading plant of the Sinai 10
Mining Company. A conspicuous round hill, with a flat summit,
rises from the coast 2 cables north-westward of Cairn point. *See*
view on chart 757.

Pier.—A screw pile pier extends 438 feet (133^m5) south-south-
eastward from the shore fronting the Company's offices; there is 15
a conspicuous transporter on the pierhead.

Danger.—Buoy.—A sand and coral bank, which dries in places,
and is connected with the shore, about one cable westward of the pier,
by a shallow spit, extends to a distance of about 5 cables offshore.

A black conical buoy, surmounted by a ball, is moored on the 20
southern side of this bank, about 7 cables south-westward of the head
of the pier.

Anchorage.—Mooring buoys.—Directions.—Good anchorage
may be obtained here in depths of from 12 to 14 fathoms (21^m9 to 25^m6),
sand and mud, but as the Sinai Mining Company's steamer generally 25
anchors close southward of the pier this berth should be left clear in her
absence.

Landing is often impracticable during strong southerly winds and the
anchorage is then untenable.

There are some mooring buoys in the vicinity of the pier. 30

A large vessel can lie alongside the pierhead, except during strong
southerly winds, with her head to the west, using the buoy westward
of the pierhead for her bow hawser, the buoy eastward of the pierhead
for her stern hawser and the buoy south-eastward of the pierhead for
a hawser from her port quarter; there is a mooring post on each side 35
of the inner end of the pier for hawsers from the starboard bow and
quarter.

A vessel making the anchorage in Abu Zenima bay should steer in
with the conspicuous round hill described above, bearing 082° , which
leads southward of the bank off Ras Abu Zenima, and continue on this 40
course until the pier bears 018° , when course may be altered north-
eastward for the anchorage.

Chart 757, with plan of Abu Zenima bay.

Communications.—There is occasional steamer communication 45
with Suez.

A light railway runs from near the pier, south-eastward along the
coast and across El Markha plain, which lies about 6 miles south-
eastward of Ras Abu Zenima, to El Mereighat, a distance of about
 $8\frac{1}{2}$ miles.

The camel track from Suez to Tor, a village 56 miles south-south- 50
eastward of Ras Abu Zenima, passes close to the coast in the vicinity
of this bay, and there is a quarantine inspection station for pilgrims
here.

The Company's motor lorries run a service once or twice a week; the

Charts 757, 8a, 2523.

Chart 757, with plan of Abu Zenima bay.

journey from Suez to Abu Zenîma by the desert road takes about 4 hours.

Abu Zenîma is connected by telegraph with Suez and Tor.

5 *Chart 757.*

Cairn point to Ras Sherâtîb.—Aspect.—Dangers.—From Cairn point (*Lat. 29° 02' N., Long. 33° 08' E.*) the coast trends about $3\frac{1}{2}$ miles south-eastward along the base of the hills backing the coast, one of which, Gebel Matalla (Jebel Metalla), situated about 2 miles north-eastward of Ras Abu Zenîma, is 1,309 feet (399^m0) high, white, square-topped and conspicuous; thence the coast trends in a southerly direction for about 20 miles to Ras Sherâtîb, and is bordered by reefs which, in places, extend about one mile offshore.

Ras Sherâtîb is low and sandy.

15 The hills mentioned above terminate abruptly in about lat. 29° N. and from this position the plain of El Markha extends about 12 miles southward, with an average width of 4 miles; this plain, which rises gradually from the coast, is stony with a gravel surface and some scattered bushes. At its southern end the hills approach to within 20 about 3 cables of the coast and for about 15 miles further southward the land is low from one to 4 miles inland.

The series of small mountain ranges described on page 94 gradually decrease in elevation until, about 7 miles south-eastward of Gebel Matalla, they terminate westward of the dark Gebel Samra (Jebel 25 Sumra), which is 2,280 feet (694^m9) high. About 11 miles farther southward light-coloured hills again rise, gradually increase in elevation and, becoming more sandy, join Gebel Abu Durba, a granite formation, attaining an elevation of 1,473 feet (449^m0), about 9 miles south-south-eastward of Ras Sherâtîb.

30 Wadi Feirân, a break in the light coloured hills about 5 miles east-north-eastward of Ras Sherâtîb, shows prominently against a dark range farther inland, and is a good landmark. Round hill, 1,614 feet (491^m9) high, with a cairn on its summit, is situated about 7 miles south-eastward of Ras Sherâtîb, and is conspicuous.

35 From the gulf, in the vicinity of Ras Za'farâna (page 88), Gebel Serbâl, 6,791 feet (2,069^m9) high and massive, about 18 miles eastward of Round hill, and Gebel Umm Shomer, 8,484 feet (2,585^m9) high, about 22 miles south-eastward of Gebel Serbâl, are visible above the hills near the coast. From a little southward of Ras Za'farâna the dark Abu 40 Durba range and the dark Abu Huswa range, close south-eastward of the Abu Durba range, have the appearance of an island. See view on chart.

A detached shoal, with a depth of 3 fathoms (5^m5), lies about 6 miles south-eastward of Ras Abu Zenîma and about half a mile offshore.

45 Another detached shoal, with a depth of 3 fathoms (5^m5), lies about $8\frac{1}{2}$ miles northward of Ras Sherâtîb and three-quarters of a mile offshore, and a shoal, with a depth of 5 fathoms (9^m1), is situated about three-quarters of a mile north-westward of the same point.

Charts 2838, 757.

50 **Ras Sherâtîb to Ras el Sebîl.—Aspect.**—From Ras Sherâtîb the coast trends about 35 miles south-eastward to westward of the village of Tor and thence about 11 miles south-south-eastward to Ras el Sebîl; it is fringed in places by a reef and depths of more than 20 fathoms (36^m6) will be found in places only about a quarter of 55 a mile offshore.

Charts 8a, 2523.

Chart 757.

The granite hills of the Abu Durba range (*Lat. 28° 30' N., Long. 33° 18' E.*), partly covered with sand, extend about 24 miles south-eastward from a position 8 miles south-eastward of Ras Sherâtîb and terminate in Gebel Hammâm Saiyidna Mûsa, which is conspicuous; Gebel Abu Durba, 1,473 feet (449^m0) high and about 12 miles south-south-eastward of Ras Sherâtîb and close to the coast, is a conspicuous double peak; Gebel Abu Huswa, 3½ miles east-south-eastward of Gebel Abu Durba, attaining an elevation of 2,221 feet (677^m0), is the summit of the coastal range. A few houses and a pier were situated on the coast, in 1922, about three-quarters of a mile southward of Gebel Abu Durba.

Mount Sinai or Gebel Mûsa, 7,497 feet (2,285^m1) high, is situated about 37 miles eastward of Gebel Abu Durba; it is not visible from the gulf, except from a very small area near Gebel Hammâm Fara'un (page 93), being obscured by a mountain range, attaining an elevation in Gebel Katherina, 2 miles south-westward of Mount Sinai, of 8,651 feet (2,636^m8).

Charts 2838, 757.



Gebel Hammâm Saiyidna Mûsa, bearing 107°, distant 11 miles.

(Original dated 1857-59.)

Tor is distinguished by a grove of palm trees, which, except for a few close to the coast about 3 miles northward, are the only trees visible from the gulf, southward of Suez bay.

Southward of Tor a sandy desert plain, intersected with water courses, rises gradually from the coast to an elevation of about 1,000 feet (304^m8) at the base of the mountains some 12 miles inland; this plain also extends a considerable distance north-westward between the coastal range and the mountains of the interior.

Chart 2838.

Qurein 'Atût (Gerain Utud), a dark sugarloaf peak, situated westward of the main range and about 14 miles east-south-eastward of Tor, and Gebel Mezra'îya (Jebel Musrayieb or Towila), rugged topped and covered with sand, situated about 16½ miles farther south-eastward, are good landmarks. See view on chart 757.

Charts 2838, 757.

Outlying banks.—**Light-buoy.**—Tor bank and Felix Jones patches, together with the light-buoy marking Moresby shoal, are described on pages 91-92.

Chart 757.

Coast.—**Dangers.**—**Clearing marks.**—A shallow rocky bank extends about 6 miles southward of Ras Sherâtîb (*Lat. 28° 40' N., Long. 33° 12' E.*); Sha'ab el Hasa, which dries in places, lies at the western edge of this bank and about 2½ miles offshore. Sherâtîb shoals, a group of rocky shoals, the eastern end of which lies one mile west-south-westward of the southern extremity of Sha'ab el Hasa,

Charts 757, 8a, 2523.

Chart 757.

have a least depth of $3\frac{1}{2}$ fathoms (6^m4) and extend about $3\frac{1}{2}$ miles west-north-westward; there are strong tide races over these shoals even in calm weather.

- 5 Gebel Abu Durba in line with Gebel Abu Huswa, bearing 113° , leads about $1\frac{1}{2}$ miles south-eastward of Sherâtîb shoals (*see* View B on chart); these shoals should not be approached within a depth of 30 fathoms (54^m9).

- 10 El Belaiyim (Blahim), the entrance to which is situated about 8 miles south-south-eastward of Ras Sherâtîb, is a lagoon with a greatest depth of about 8 fathoms (14^m6) in its centre; it is entered by a narrow channel in which, in 1928, there was a depth of 4 feet (1^m2). The tidal streams flow strongly through the entrance.

- 15 Three shoals, with depths of 5, 4, and 3 fathoms (9^m1 , 7^m3 , and 5^m5), respectively, over them, lie about one mile offshore, about 7 miles south-eastward of El Belaiyim.

Chart 8a, plan of Tor harbour.

- Tor harbour.**—A small bay, open southward, and on the north-eastern shore of which is Tor village, is named Tor harbour; the western
20 entrance point is formed by a low-lying peninsula fringed by a coral reef, which extends about $3\frac{1}{2}$ cables south-south-eastward of its southern extremity, and is marked at its south-eastern edge by Grafton light-beacon. The north-eastern side of the harbour is bordered by a coral reef extending to as much as $1\frac{1}{2}$ cables offshore.

- 25 The harbour is somewhat sheltered from the south-west by 'Erg Riyâh, a coral reef lying about 8 cables south-south-westward of Grafton light-beacon.

- There are depths of from 5 to 7 fathoms (9^m1 to 12^m8) in the entrance to the harbour, decreasing suddenly to 2 fathoms (3^m7) about 4 cables
30 from the head of the bay; a coral reef extends about $1\frac{1}{2}$ cables from the head of the harbour.

Charts 8a, plan of Tor harbour; 2838.

- Dangers.—Beacon.**—A coral patch, with a depth of 4 fathoms (7^m3), lies about $5\frac{3}{4}$ miles southward of Grafton light-beacon and about
35 $2\frac{1}{4}$ miles offshore; it is situated near the northern end of a bank with depths of from 5 to 10 fathoms (9^m1 to 18^m3) over it.

Within about 4 miles southward and $4\frac{3}{4}$ miles south-westward of Grafton light-beacon are several coral patches with depths of from 6 to 10 fathoms (11^m0 to 18^m3) over them.

- 40 *Chart 8a, plan of Tor harbour.*

- 'Erg Riyâh has a least depth of 4 feet (1^m2), but even during strong north-westerly winds the sea seldom breaks over it and it must, therefore, be approached with caution; this reef does not show well, and, in winter, the water over it is not discoloured. The centre of the reef is
45 marked by Bey beacon, an open ironwork structure, surmounted by a triangular cage, 37 feet (11^m3) in height. A 5-fathom (9^m1) patch is situated about $6\frac{1}{2}$ cables southward of Bey beacon.

- A 3-fathom (5^m5) coral patch lies about $5\frac{1}{2}$ cables south-eastward of Grafton light-beacon (*Lat.* $28^\circ 14' N.$, *Long.* $33^\circ 37' E.$) and about
50 3 cables offshore, and a similar patch, with a depth of $3\frac{1}{2}$ fathoms (5^m9), is situated about $3\frac{1}{2}$ cables east-south-eastward of this light-beacon; a shoal, with a depth of 5 fathoms (9^m1) over it, lies in the fairway, about $2\frac{3}{4}$ cables eastward of the same light-beacon.

Lights.—Beacons.—A light is exhibited, at an elevation of 18 feet

Charts 2838, 757, 8a, 2523.

Chart 8a, plan of Tor harbour.

(5^m5), from Grafton light-beacon, a white quadrangular tower, with a black horizontal band.

A light is occasionally exhibited from the head of the boat harbour jetty, about 5½ cables eastward of Grafton light-beacon. 5

Two pole beacons, painted black and white, from each of which a light is occasionally exhibited, are situated on the eastern shore about one mile east-south-eastward of Grafton light-beacon; the front beacon, surmounted by a black and white chequered triangle, stands about half a cable inland, and the rear beacon, surmounted by a black and white chequered ball, 2½ cables eastward of the front beacon. 10
These beacons are not clearly visible until nearly in transit, when they appear in a gap in the surrounding trees.

Jetties.—Three jetties extend from the north-eastern side of the harbour. An area on both sides of the outer arm of the north-western jetty had, in 1936, been dredged to a depth of 29 feet (8^m8) for a distance of 350 feet (106^m7) inwards on either side; the other two jetties had, in 1936, a depth of only about 6 feet (1^m8) alongside their heads. 15

The boat harbour jetty, on which there is a derrick and a flagstaff, had, in 1935, a depth of 18 feet (5^m5) on the northern side of its head; 20
fresh water is laid on to this jetty.

Anchorage.—**Boat harbour.**—There is anchorage, in a depth of 6 fathoms (11^m0), mud and sand, with Grafton light-beacon, bearing about 230°, distant about 1¾ cables.

Anchorage can also be obtained about 2½ cables southward of 25
Grafton light-beacon, in a depth of about 10 fathoms (18^m3), good holding ground, but exposed to north-westerly winds.

An opening in the coastal reef, about 3½ cables north-westward of the front leading beacon, forms a boat harbour; the boat harbour is on the eastern side of the jetty and is sheltered from all winds except those 30
from southward.

Directions.—There is a navigable channel, about 4 cables wide, with a least depth of 6 fathoms (11^m0) in the fairway, between the western entrance point and 'Erg Riyâh, and a channel, about 5 cables wide, with a least depth of 11 fathoms (20^m1) in the fairway, eastward 35
of 'Erg Riyâh.

A vessel entering by the northern channel should steer in with the beacons in line, bearing 095°, and pass about 1½ cables southward of Grafton light-beacon; she should then alter course northward for the anchorage, passing about 1½ cables eastward of the same light-beacon, 40
bearing in mind that, as stated previously, the depths decrease suddenly to 2 fathoms (3^m7) about 4 cables from the head of the harbour.

Entering by the eastern channel the eye is the best guide until the beacons are seen. The coastal reef shows more clearly than 'Erg Riyâh reef and should, therefore, be closed until Grafton light-beacon 45
(*Lat.* 28° 14' N., *Long.* 33° 37' E.) is sighted, when this beacon should be steered for, bearing 349°, until about 2½ cables distant; the harbour should then be entered as previously directed.

Quarantine.—The pilgrimage season which, in 1942, started on the 30th December, is 11 days earlier every year; it lasts about 2 months. 50

Village.—Tor village has some well-built stone houses, a conspicuous white mosque, and a church with a bell-tower. Behind this village lies another village, built of unburnt brick, with a mosque. There are pilgrim barracks and some hospital buildings about half a mile inland

Chart 8a, plan of Tor harbour.

from the boat harbour ; a square building stands about $1\frac{1}{2}$ miles north-westward of Tor village at the base of some low hills ; a conspicuous black chimney is situated alongside the quarantine building at the
 5 inner end of the middle jetty, and about 4 cables southward of the southern quarantine building and close southward of a conspicuous clump of trees are three conspicuous white buildings. Two cylindrical concrete water tanks are easily distinguished.

Fresh provisions, water, and sometimes fruit and ice can be
 10 obtained in small quantities.

For Meteorological tables, *see* page 49.

Communication.—Tor is connected to the general telegraph system, and there is a radio station here, *see* page 25.

Chart 2838.

15 **Sheikh Riyâh harbour.**—Sheikh Riyâh harbour lies eastward of a low sandy point which extends 4 cables southward from the coast about 4 miles southward of Tor harbour ; the coastal reef fringes the western side of this point, extending to about $2\frac{1}{2}$ cables westward and southward of it ; Sha'ab Riyâh, a detached shoal with a least depth of
 20 $2\frac{1}{2}$ fathoms (4^m1) over it, lies about 2 cables south-eastward of the extremity of the coastal reef.

The channel between Sha'ab Riyâh and the coastal reef eastward is about 3 cables wide, is free from dangers, and has a least depth of 9 fathoms (16^m5) in it.

25 There is sheltered anchorage in this harbour in depths of from 5 to 7 fathoms (9^m1 to 12^m8), sand.

Coast.—Dangers.—Ras el Sebîl is a low-lying point about 6 miles south-south-eastward of Sheikh Riyâh harbour ; the coast between is bordered by a coral reef extending to as much as one mile offshore.

30 A detached reef, partly above water, is situated about $1\frac{1}{2}$ miles west-north-westward of Ras el Sebîl and about $1\frac{1}{2}$ miles offshore ; three detached shoals, with depths of from 2 to 3 fathoms (3^m7 to 5^m5) over them, lie off the south-eastern end of this reef, between it and the coastal reef.

35 **Ras el Sebîl to Ras Kenîsa.—Aspect.**—From Ras el Sebîl the coast trends about 12 miles south-eastward to Ras Kenîsa (Iknaîsi) and is bordered by coral reefs.

The aspect of this part of the coast is described on page 97.

Off-lying shoal.—Poynder shoal, lying about $7\frac{1}{2}$ miles westward of
 40 Ras Kenîsa and 5 miles offshore, has a depth of 3 fathoms (5^m5) over it.

Coast.—Dangers.—Between Ras el Sebîl (*Lat.* $28^\circ 04' N.$, *Long.* $33^\circ 43' E.$) and Ras Garra (Jarrah), a low-lying point about $3\frac{1}{2}$ miles south-eastward, the coast recedes a little, the indentation being almost filled with reefs, which dry ; Sha'ab Garra (Shab Jarrah), the western-
 45 most danger in this area, lying about $2\frac{1}{2}$ miles west-south-westward of Ras Garra, dries in parts ; for a distance of about $1\frac{1}{2}$ miles south-eastward of the south-eastern end of Sha'ab Garra are some rocks and shoals, the positions of which can best be seen on the chart.

The coast south-eastward of Ras Garra, between it and Ras Kenîsa,
 50 is very foul, reefs extending to as far as $1\frac{1}{2}$ miles offshore.

Ras Kenîsa is low and sandy.

STRAIT OF GÛBAL.—The Strait of Gûbal (Jubal) lies between the African coast extending from the Zeit peninsula (page 91) to

Charts 2838, 757, 8a, 2523.

Chart 2838.

Shadwân island, about 30 miles south-eastward, to the south-west, and the south-western coast of the Sinai peninsula, extending from Ras Kenisa (page 100) to Ras Muhammad, about 24 miles east-south-eastward, to the north-east; the fairway of the strait is $6\frac{1}{2}$ miles wide at its narrowest part.

Tidal streams.—See page 87.

Charts 2838, 757, 8a.

SOUTH-WESTERN SIDE.—Aspect.—A mountain range, about 13 miles inland from the Zeit hills (page 91), extends south-eastward and approaches the coast about 15 miles southward of the Zeit peninsula; Homra el Girigâb (North Saddle), about $13\frac{1}{2}$ miles south-westward of the 1,496-foot (456^m0) summit of the Zeit hills, is 1,414 feet (431^m0) high.

Southward of the Zeit peninsula the coast is generally low and rises to the range described above, which lies from about $1\frac{1}{2}$ to 8 miles inland and in this area attains elevations of from 570 to 1,342 feet (173^m7 to 409^m0).

A mountain range lying from about 17 to 27 miles inland from this part of the coast has some conspicuous peaks, amongst which are Gebel Khurm el Asmar (Sugar Loaf), a peak about 26 miles southward of Homra el Girigâb, 5,131 feet (1,563^m9) high, Gebel Qattâr (Jebel el Gatah), about 19 miles south-south-eastward of Gebel Khurm el Asmar 6,440 feet (1,962^m9) high, and Gebel Shâyib (Jebel Umm Delfa), about 10 miles south-eastward of Gebel Qattâr, 7,165 feet (2,183^m9) high. See view on chart 2838.

Between these two mountain ranges is an undulating desert plain intersected by water courses.

Chart 2838.

From abreast Ras Zeit (page 91), Ashrâfi light-tower, about 14 miles south-eastward, is visible, with the round summit of Gûbal (Jubal) island, about 10 miles south-south-eastward of Ashrâfi light-tower, and the summits of the hills on Shadwân island, further south-eastward; the hills on Ras el Gemsa (Jemsa), lying about $9\frac{1}{2}$ miles southward of the southern end of the Zeit peninsula, are also visible.

Off-lying islands and dangers.—Ashrâfi islands.—Clearing marks.—From about 3 miles east-south-eastward of Umm el Kimân (page 91) three reefs extend about $7\frac{1}{2}$ miles in a south-easterly direction; the Ashrâfi islands (Lat. $27^{\circ} 47' N.$, Long. $33^{\circ} 42' E.$), from 6 to 15 feet (1^m8 to 4^m6) high, consisting of dead coral and sand, are situated on parts of Sha'ab Ashrâfi and Sha'ab Mukowarat (Shab Kowarat), the two western reefs.

The level of the sea in this locality is much affected by the wind.

Sha'ab Ashrâfi, the northern end of which is covered at low water, has two rocks, 6 feet (1^m8) high, on it; close southward of the southern end of Sha'ab Ashrâfi is a shoal, with a depth of 4 fathoms (7^m3) over it, and about 4 cables further southward is a reef, above and below water, while about 3 cables further south-south-westward are two sunken coral rocks which are clearly visible from the masthead.

Sha'ab Mukowarat, the central reef, with several islets on its northern part, terminates southward in Sandy islet, 5 feet (1^m5) high. In its southern part is a basin, called by Arab pilots Umm el Kurush, with depths of from 2 to 7 fathoms (3^m7 to 12^m8), sand, in it; the entrance

Chart 2838.

is from eastward, through a break in the coral reef, about three-quarters of a mile northward of Sandy islet.

Kowarat channel, between Sha'ab Ashrâfi and Sha'ab Mukowarat, is deep and free from dangers.

The eastern reef consists of three coral patches, the southern and largest of which is covered at low water; a bank, with depths of less than 5 fathoms (9^m1), extends about 4 cables north-north-eastward and 3 cables eastward of the northern patch; in the approach from eastward the depths decrease rapidly. A disused light-tower, consisting of a red iron framework tower on a masonry base, 140 feet (42^m7) in height, stands at the south-eastern end of the northern patch.

An iron jetty, alongside which boats can go at all states of the tide, is situated at the base of this disused light-tower.

Ashrâfi channel, between Sha'ab Mukowarat and the eastern reef, is deep and free from dangers in the fairway.

Ashrâfi light-tower in line with the north-eastern extreme of Shadwân island, bearing about 136°, leads north-eastward of the northern parts of Sha'ab Ashrâfi and Sha'ab Mukowarat.

Caution.—The tidal streams within 2 miles of these reefs are very uncertain in direction.

Light.—A light is exhibited, at an elevation of 124 feet (37^m8), from a black circular stone tower, with white horizontal bands, on a concrete base, situated on the central patch of the eastern reef described above.

Anchorage.—Vessels, with local knowledge and a draught not exceeding 12 feet (3^m7), may enter Umm el Kurush by keeping an islet lying close northward of the northern of the two islands Geisûm (Gaysûm), about 4½ miles south-south-westward of Ashrâfi light-tower, in line with a sharp peak on the mainland, bearing about 251°, when course should be altered sharply northward to avoid a shoal, with a depth of 2 fathoms (3^m7) over it, situated 2 cables within the entrance; anchorage can be taken as convenient clear of the reefs.

Anchorage may also be obtained by vessels with local knowledge in depths of from 7 to 10 fathoms (12^m8 to 18^m3), sand and coral, about 2 cables south-eastward of Sandy islet.

Geisûm islands.—**Beacon.**—The north-eastern extremity of the northern of the two Geisûm islands (*Lat.* 27° 42' N., *Long.* 33° 41' E.) lies about 1½ miles westward of Sandy islet; the island is flat, with a hillock, 50 feet (15^m2) high, about 3 cables southward of its north-eastern point.

A coral reef, which dries, extends about 1½ miles north-north-westward of the north-western end of this island, and fringes its south-western side; this reef connects the two islands. The dangers between the southern end of Sha'ab Ashrâfi and the reef extending north-north-westward from the northern Geisûm island are described on page 101; some detached rocks are situated about 6 cables northward of the northern end of the northern island, a detached shoal, with a depth of 3 fathoms (5^m5), about 1½ cables further southward, and some more above-water rocks about 4 cables further south-eastward.

The north-eastern end of the southern Geisûm island lies about one mile south-eastward of Sandy islet; the island is low, with a dark brown conical hillock, 100 feet (30^m5) high, at its north-eastern end, and a white sandy hillock, 37 feet (11^m3) high, 1½ miles further south-

Chart 2838.

ward ; the northern part of this island has white sandy cliffs. A coral reef fringes both sides of the northern part of the island, extending to a distance of about 3 cables offshore at its eastern extremity, where it is marked by an iron tripod, surmounted by a triangle, 30 feet (9^m1) in height ; the south-eastern side of the island is foul to a distance of as much as 5 cables offshore, and a coral reef extends about 6 cables south-south-westward of its south-western extremity, while the western side of the island is foul to a distance of about 7 cables offshore ; a spit, with a depth of 3 fathoms (5^m5) over it, extends about 2 cables northward of the north-eastern end of the southern Geisûm island.

Anchorage.—There is anchorage, in depths of about 11 fathoms (20^m1), south-eastward of the southern Geisûm island, with the two eastern points of that island in line, bearing about 358°, and the summit of Gûbal island bearing 105° ; southward of this position the depths increase rapidly to 20 and 30 fathoms (36^m6 and 54^m9), but there is a depth of 12 fathoms (21^m9) 6 cables south-eastward of this position.

Gûbal island.—Beacon.—Light.—Gûbal island, the north-western point of which lies about 2½ miles east-south-eastward of Geisûm islands beacon, has a rounded summit, 397 feet (121^m0) high ; the eastern side of this island is steep-to, with depths of over 20 fathoms (36^m6) close off it.

Sha'ab Gûbal (Shab Jubal), the eastern side of which is steep-to, extends about 3 miles north-north-westward of the northern end of Gûbal island, has some islets on it, the southernmost of which is known as Gûbal Saghîra (Jubal Seria), and some black coral above-water rocks at its edges ; the north-western edge of this reef is marked by an iron tripod, surmounted by a truncated cone, 30 feet (9^m1) in height. A bank, with depths of from 8 to 10 fathoms (14^m6 to 18^m3) over it, extends about 8 cables north-north-westward of the northern end of Sha'ab Gûbal.

A light is exhibited, at an elevation of 83 feet (25^m3), from a black iron column, situated on Bluff point (*Lat. 27° 41' N., Long. 33° 48' E.*) the north-eastern extreme of Gûbal Saghîra.

Between the south-western side of Gûbal island and the north-eastern side of Tawîla (Towila) island, about 2 miles south-south-westward, the area is encumbered with rocks and shoals.

Charts 3752, plans of Shadwan channel and of Jemsa and Kabreit anchorages and approaches ; 2838.

Tawîla island.—Tawîla island is low, flat, and composed of coral ; the eastern and highest part, on which is a small cairn, is from about 30 to 50 feet (9^m1 to 15^m2) high. It is bordered by an extensive coral reef, except for about one mile on its eastern and south-eastern sides where the reef is narrow.

The climate is dry and, although hot in summer, is, during calms and light breezes, quite pleasant for Europeans.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

Dangers.—Beacons.—Buoy.—Clearing marks.—A detached reef, with a white sand patch, which dries, at its southern end, lies about one mile westward of the western extremity of Tawîla island, and is marked on its northern side by South Tawîla beacon, an iron tripod, surmounted by a "T", 30 feet (9^m1) in height ; a spit, with a depth of 18 feet (5^m5) over it, extends about 1½ cables westward of

Charts 2838, 757, 8a, 2523.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

the north-western edge of this reef, and a spit, with a depth of 27 feet (8^m2) at its northern end, extends about 3 cables northward; a black spherical buoy, known as East Tawila buoy, is moored about 1½ cables westward of the northern end of this latter spit.

Chart 3752, plan of Shadwan channel.

North-East patches, lying between the north-eastern side of Tawila island and the south-western side of Gûbal island, is a group of coral reefs, which dries in patches; Endeavour shoal, with a least depth of 21 feet (6^m4), sand and coral, is situated about one mile north-north-eastward of Henderson point, the eastern extremity of Tawila island.

Chart 2838.

Groups of coral reefs, partly detached, extend about 6½ miles south-south-eastward and about 4 miles south-westward of the southern extremity of Tawila island; Sha'ab Tawila (Shab Towila), the western edge of which is situated about 4 miles south-westward of the southern extremity of Tawila island, covers at high water, and is marked at its south-western edge by an iron tripod, surmounted by a truncated cone, 30 feet (9^m1) in height; a reef, lying about 4½ miles south-south-eastward of the southern extremity of Tawila island, also covers at high water, and is marked on its south-eastern and south-western sides by two iron tripods known, respectively, as South Rakau and West Rakau beacon, each 30 feet (9^m1) in height, the former being surmounted by a ball and the latter by a triangle. A crescent-shaped coral reef, the north-western end of which lies about 2½ miles south-eastward of South Rakau beacon, covers at high water, and is marked on its northern side by an iron tripod, known as Melana beacon (*Lat.* 27° 25' N., *Long.* 33° 52' E.), and surmounted by a diamond, 30 feet (9^m1) in height; this reef is steep-to on its northern and eastern sides, but its concave side is open south-westward and the area within is encumbered with rocks.

Umm Gamar (Gumârîh) islet, about 4½ miles south-south-eastward of Melana beacon, in line with the summit of Giftûn (Jifatin) Kebîr, about 7½ miles further southward, bearing about 174°, leads about one mile eastward of the crescent-shaped coral reef described above.

Charts 3752, plan of Endeavour harbour and approach; 2838.

† **Anchorage.**—Endeavour harbour, or Sherm Tawila, situated on the eastern side of Tawila island, at its southern end, affords anchorage to small vessels; it is entered from eastward, passing northward of Sutherland peninsula.

Chart 3752, plan of Endeavour harbour and approach.

Sutherland peninsula, forming the south-eastern extreme of Tawila island, is a plateau about 15 feet (4^m6) high; from its north-eastern end a coral reef, which dries from one to 3 feet (0^m3 to 0^m9), extends about 2½ cables east-north-eastward, and depths of less than 18 feet (5^m5) extend about half a cable beyond the edge of this reef. On the northern side of the harbour, which is fringed in places by the coastal reef, the coastal bank, with depths of less than 18 feet (5^m5), extends in places to a distance of about 1½ cables offshore.

East jetty, situated about 2½ cables north-north-westward of the northern extreme of Sutherland peninsula, extends from the northern shore of the harbour for a short distance in a south-south-westerly direction; West jetty, lying about 3½ cables west-south-westward of East jetty, extends for a short distance south-eastward from the northern shore.

Charts 2838, 757, 8a, 2523.

Chart 3752, plan of Endeavour harbour and approach.

The entrance channel is half a cable wide with a least depth of 19 feet (5^m8) in the fairway, and small vessels may anchor in a depth of 38 feet (11^m6) with the root of East jetty, bearing 052°, distant 1½ cables.

Owing to the entrance being so narrow a more convenient anchorage 5
may be found outside the harbour in depths of from 20 to 23 feet (6^m1 to 7^m0) with the head of East jetty, bearing about 260°, distant about 6½ cables.

Chart 3752, plan of Shadwān channel.

A sandy cay, 2 feet (0^m6) high, lies on the coastal reef about 4 cables 10
east-north-eastward of South point, the southern extreme of Sutherland peninsula, and there is good anchorage in a depth of about 7 fathoms (12^m8) with this cay, bearing 010°, distant about 1½ miles.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ;
2838. 15

Tawīla channel.—Beacon.—Tawīla (Towila) channel, between the southern Geisūm island and the reefs extending south-south-westward of it, on the western side, and Gūbal and Tawīla islands, on the eastern side, is deep and free from dangers in the fairway.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches. 20

Bahriya Tawīla (Vahari Towila), a sandy islet about 5 feet (1^m5) high, situated on the western side of the channel, about 8 cables north-westward of South Tawīla beacon (*Lat. 27° 35' N., Long. 33° 43' E.*), is marked on its south-western side by an iron tripod, surmounted by a triangle, 30 feet (9^m1) in height, known as North Tawīla beacon ; the 25
detached reef on the eastern side of the channel, marked by South Tawīla beacon, is described on page 103.

Numerous reefs and shoals off-lie the western side of the channel for a distance of about 2½ miles to the south-west of Bahriya Tawīla.

Chart 2838. 30

A rocky shoal, with a least depth of 5½ fathoms (9^m6) over it, lies in the fairway of the channel, about 2½ miles south-westward of South Tawīla beacon.

For directions *see* page 116.

Shadwān island.—Light.—Shadwān island (*see* view below), the 35
north-western extreme of which lies about 7 miles east-south-eastward of the south-eastern extremity of Tawīla island, is rugged and attains an elevation of 990 feet (301^m7), 1½ miles north-north-westward of its south-eastern extremity ; the hills are divided by ravines, the sides of which are steep. 40

A reef extends one mile north-westward of the north-western end of this island, and continues, at about that distance from its south-western side, for about 2 miles south-eastward ; the remainder of the south-western side is bordered by a coral reef extending as much as



143°, distant about 7 miles.

Shadwān Island.

188°.

(Original dated 1857-59.)

3 cables offshore ; the southern, north-eastern and northern sides of the 45
island are fringed by a coral reef extending a short distance offshore.

Charts 2838, 757, 8a, 2523.

Chart 2838.

A light is exhibited, at an elevation of 120 feet (36^m6), from a white circular stone tower, the upper part painted black, with, below it, black vertical stripes, on a rectangular dwelling, situated on the south-eastern extremity of Shadwân island.

See view on chart.

Reefs north-westward of Shadwân island.—Beacon.—Sha'ab Umm 'Ush, a sunken reef lying about 4 miles north-westward of the north-western extreme of Shadwân island, has an inlet on its south-western side, with depths of from 2 to 10 fathoms (3^m7 to 18^m3) in it; the edges of this reef are clearly visible in daylight. A spit, with a depth of 2 fathoms (3^m7) over it, extends about 2 cables north-north-westward of the north-western edge of the reef, and a 2-fathom (3^m7) shoal lies about 2 cables from the western side of the reef

15 *Charts 3752, plan of Shadwan channel; 2838.*

Siyûl Saghîra (Seaul Seria) and Siyûl Kebîra (Seaul Kebir) are two islets, lying from about 3 to 4 miles west-north-westward of the north-western end of Shadwân island; the western is 12 feet (3^m7) and the eastern 15 feet (4^m6) high.

20 Siyûl Saghîra (*Lat. 27° 33' N., Long. 33° 51' E.*) is situated on the eastern side of a reef, which dries in patches, and has a narrow coral spit extending about 5 cables eastward of its south-eastern point; two 3-fathom (5^m5) shoals and a rock, with a depth of less than 6 feet (1^m8) over it, lie from about 2 to 4 cables from the southern side of this reef, and several isolated coral patches, which dry, lie off its south-western side.

An iron framework beacon, painted black, and surmounted by a black ball, stands on a detached part of the reef, just described, near the middle of the western side of the main reef.

30 *Chart 2838.*

Siyûl Kebîra is situated on the eastern part of the northern side of a reef, which dries; this reef is clearly defined and steep-to.

There are deep channels, free from dangers, between the three reefs described above.

35 Blind reef, a sunken reef in mid-channel, about 1½ miles east-south-eastward of Siyûl Kebîra, is very narrow, not clearly visible, and is steep-to.

Sha'ab Abu Nuhâs (Shab Abu Nahas), lying about 2½ miles northward of the north-western end of Shadwân island and not far from the usual track of vessels passing up and down the Gulf of Suez, dries at extraordinary low tides only; it is steep-to, except on its southern and south-western sides, where there are patches of reef extending, respectively, about 4 cables southward and 2 cables south-westward.

Anchorage.—Danger.—Beacons.—Vessels may obtain anchorage, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), sand and coral, sheltered from northerly winds, off the south-western side of Shadwân island, about 2½ cables south-westward of a coral rock, which dries one foot (0^m3), lying 5½ miles west-north-westward of Shadwân island light-tower and about 5 cables offshore; southward of this position the depths increase rapidly, depths of over 100 fathoms (182^m9) being found within a distance of about 7 cables. A vessel should approach this anchorage with the low western extreme of Shadwân island in line with the rounded summit of Gûbal island, bearing 321°, and anchor when soundings are obtained.

Charts 757, 8a, 2523.

Chart 2838.

Good landing may be obtained about 7 cables northward of the rock mentioned above and also on the coast about $1\frac{1}{2}$ miles eastward of this rock, where the passage through the reef is marked by two small beacons.

The position of the coral rock mentioned above is indicated by two pairs of beacons in line. The rear beacon of the western pair is a white cairn of stones situated on the summit of a 229-foot (69^m8) hill, about $1\frac{1}{2}$ miles south-eastward of the north-western extremity of the island (*Lat.* 27° 31' N., *Long.* 33° 55' E.), and the front beacon is a flat white stone, with a black horizontal band, situated on the slope of a hill about 4 cables south-south-eastward of the upper beacon; these beacons, in line, bear 327°. The rear beacon of the eastern pair is a white cairn of stones situated on a spur from the hills, and the front beacon situated on the top of a low cliff about 9 cables eastward of the front beacon of the western pair is a rectangular tank painted white on its western side and in red and white horizontal bands on its northern and southern sides; these beacons, in line, bear 036°. None of these beacons is conspicuous.

Reefs south-westward of Shadwân island.—The reefs, lying about $5\frac{1}{2}$ miles south-westward of the south-western side of Shadwân island, are described on page 104.

Umm Gamar islet (page 104) is situated on the eastern side and near the southern end of a steep-to coral reef, which extends 6 cables northward of the islet; the eastern side, which is the highest part, has coral cliffs about 50 feet (15^m2) high.

Sha'ab Saghîr tal Umm Gamar (Shab Seria tal umm Gumarh), a sunken reef lying about one mile south-south-eastward of Umm Gamar islet, is very narrow; Carless reef, another sunken reef, situated about 2 miles further south-eastward, is small and not clearly visible. Both reefs are steep-to.

A reef, situated about 4 miles westward of Umm Gamar islet, lies on a bank which extends about three-quarters of a mile eastward of it, and on which there are numerous shoal patches; about 4 cables from the northern end of this reef, which covers at high water, a narrow projection extends 4 cables eastward.

Charts 3752, plan of Shadwan channel; 2838.

Shadwân channel.—Shâdwân channel, between Tawîla island and the reefs southward of it, on the western side, and Sha'ab Umm 'Ush and Siyûl Saghîra and Siyûl Kebîra, on the eastern side, is deep and is free from dangers in the fairway; the southern approach to this channel lies between Umm Gamar islet and the southern part of Shadwân island. For directions, see page 114.

Chart 2838.

Zeit peninsula to Ras el Gemsâ.—Dangers.—Beacon.—The southern end of the Zeit peninsula is low and is connected by a reef with Ghânim (Ranim), an island, which is low and sandy, about 6 cables south-south-eastward; Sha'ab Ghânim (Shab Ranim) extends about $1\frac{1}{2}$ miles eastward and south-eastward of the southern end of Ghânim, and foul ground extends to as much as $1\frac{1}{2}$ miles south-westward and westward of this island.

Ghubbet el Zeit, on the south-western side of the Zeit peninsula, is bordered by a bank extending to as much as 4 cables offshore in places; from Ras el Bahr (Ras al Bahar), the south-western entrance point,

Charts 757, 8a, 2523.

Chart 2838.

a reef extends about 6 cables eastward and about one mile northward ; a spit, with depths of from $1\frac{1}{2}$ to 3 fathoms (2^m3 to 5^m5) over it, extends about $1\frac{1}{2}$ miles north-north-westward of the latter reef. The entrance
 5 channel to Ghubbet el Zeit is narrowed to about 2 cables in width between the reef extending eastward of Ras el Bahr and the foul ground extending southward of the Zeit peninsula (*Lat.* $27^\circ 47' N.$, *Long.* $33^\circ 35' E.$), and has a least depth of 4 fathoms (7^m3) in it.
Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ;
 10 2838.

From Ras el Bahr the coast, which is fringed by a reef, trends $4\frac{1}{2}$ miles southward, and thence about $1\frac{1}{2}$ miles eastward and $2\frac{3}{4}$ miles south-south-eastward to the southern end of Ras el Gamsa (Jemsa) peninsula, which rises in yellowish-white hills to an elevation of 265 feet
 15 (80^m8).

Reefs, on which the Umm el Heimet (Mulhaimet and Mulhaimet Seria) islets, 17 and 20 feet (5^m2 and 6^m1) high, respectively, are situated, extend 10 miles south-south-eastward of Sha'ab Ghânim ; Sha'ab Gamsa (Shab Jemsa) and other reefs extend about $5\frac{1}{2}$ miles in the same
 20 direction from Ras Gamsa. About a mile westward of the northern part of Ras el Gamsa peninsula, a projection extends $1\frac{1}{2}$ miles southward, and its southern part is 170 feet (51^m8) high ; Sha'ab Barôk and some other reefs extend about 7 miles south-eastward of it, and on their north-western part are three islands, and some rocks above
 25 water ; Kabrit (Kabreit) beacon, consisting of an iron tripod surmounted by a triangle, painted black and white, stands about $1\frac{1}{2}$ cables within the south-eastern end of Sha'ab Barôk. The channels between these reefs, and between them and the Geisûm islands, are intricate.

30 **Tidal streams.**—The tidal streams follow the directions of the channels and attain a rate of about one knot, but close to the reefs the directions are uncertain and the rate is considerably increased.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

Anchorage.—Gamsa (Jemsa) anchorage, situated on the eastern
 35 side of Ras el Gamsa, about 3 cables offshore, affords anchorage in depths of from 37 to 51 feet (11^m3 to 15^m5), sand ; this anchorage is rather open northward and winds from this direction cause a nasty sea.

A jetty, with a depth of 22 feet (6^m7) alongside, projects from the shore about $7\frac{1}{2}$ cables north-north-westward of the south-eastern point
 40 of Ras el Gamsa.

Kabrit (Kabreit) anchorage, about 6 cables south-south-eastward of the south-eastern end of Ras el Gamsa, affords good anchorage, between Sha'ab Gamsa and Sha'ab Barôk, in depths of from 39 to 56 feet (11^m9 to 17^m1), sand.

45 A jetty projects a short distance south-south-westward from the shore, on the southern side of Ras el Gamsa (*Lat.* $27^\circ 38' N.$, *Long.* $33^\circ 35' E.$) ; there is a mooring buoy westward of the head of this jetty.

For directions, see page 116.

50 *Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ;*
 2838.

Ras el Gamsa to Merlin point.—Ghubbet el Gamsa.—Ghubbet el Gamsa (Jemsa), between the projection westward of Ras el Gamsa peninsula and the reefs extending south-eastward of it, on the north-

Charts 2838, 757, 8a, 2523.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ; 2838.

eastern side, and the mainland coast, which is bordered by reefs extending to as much as $1\frac{1}{2}$ miles offshore, on the south-western side, has depths of from 6 to 17 fathoms (11^m0 to 31^m1) in the entrance, 5 decreasing gradually towards the head of the bay ; about 3 miles from the head the fairway is narrowed by the coastal bank extending from both shores of the bay.

Dangers.—Buoys.—A rocky shoal, with a depth of $4\frac{1}{2}$ fathoms (8^m2) over it, lies in the approach to Ghubbet el Gamsa, about $4\frac{1}{2}$ miles 10 south-south-eastward of Kabrît beacon, and is marked on its western side by a barrel buoy, painted in black and white vertical stripes, and surmounted by a ball, and known as Turning buoy.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

A black spherical buoy, known as Elbow buoy, is moored $3\frac{1}{2}$ miles 15 south-south-eastward of Kabrît beacon.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ; 2838.

A shoal, with a depth of 18 feet (5^m5) over it, lies on the western side of the fairway, about 2 miles west-south-westward of Kabrît beacon 20 and about $1\frac{1}{2}$ miles offshore.

Chart 2838.

Coast.—Dangers.—Aspect.—From the south-western entrance point of Ghubbet el Gamsa, 4 miles south-south-westward of Kabrît beacon, the coast trends about 25 miles south-eastward to Franken 25 point, a promontory about $1\frac{1}{2}$ miles south-eastward of Dishet Abu Hurghada, which latter is a conspicuous flat-topped hill, 178 feet (54^m2) high ; it is bordered by reefs and fronted by extensive off-lying reefs and islets, extending as much as $2\frac{1}{2}$ miles offshore. Amongst these dangers, the positions and extent of which can best be seen on the 30 chart, may be mentioned, named in order from northward, Sha'ab 'Esh, about 9 miles south-eastward of the south-western entrance point of Ghubbet el Gamsa, Sha'ab Abu Sha'r, El Fanâdîr islets, and Sha'ab el Fanâdîr.

Gebel 'Esh, situated about $4\frac{1}{2}$ miles south-south-westward of the 35 south-western entrance point of Ghubbet el Gamsa and about 2 miles from the coast, is a double peak, 1,342 feet (409^m0) high, and the highest part of the coastal range.

Southward of Gebel 'Esh the coast becomes low and $10\frac{1}{2}$ miles south-south-eastward of that mountain the range ends abruptly in Gebel Abu 40 Sha'r el Qibli (Ras Abu Shaar e Goobli).

Deir Umm Deheis (El Glarë t'Abû Shaar), situated close to the coast and 3 miles east-north-eastward of Gebel Abu Sha'r el Qibli, is a ruined fort.

Chart 2838, with plan of Hurghada anchorage.

Hurghada settlement (*Lat. $27^{\circ} 13' N.$, Long. $33^{\circ} 50' E.$*) is situated 45 close south-westward of Dishet Abu Hurghada ; there are several towers between the settlement and the coast, which are very conspicuous from southward of Franken point ; several large tanks about 3 cables west-south-westward of Franken point, and the manager's 50 house about $2\frac{1}{2}$ cables south-westward, are conspicuous.

Franken point is low and sandy and between this point and Merlin point, 2 miles southward, the coast, which is the western side of Minqâr (Mingarh) channel, forms a well-sheltered bay ; Merlin point,

Charts 2838, 757, 8a, 2523.

Chart 2838, with plan of Hurghada anchorage.

a bare steep coral rock rising in precipitous ledges to an elevation of 243 feet (74^m1), is the eastern extremity of Dishet Abu Minqâr (Min-garh), a conspicuous hill, 271 feet (82^m6) high; the remains of a pier
5 and some bollards and piles are situated close southward of Merlin point.

Chart 2838.

Off-lying islands and dangers.—Gifâtîn islands.—Gifâtîn (Jifâtîn) islands, off-lying the coast in the vicinity of Merlin point to a
10 distance of about 7½ miles, is a group of islands, islets and rocks.

Giftûn Kebîr, the largest island of the group, is hilly in its northern and central part, a rugged range extending from its northern extremity and attaining an elevation of 390 feet (118^m9); the southern part of this island is a plateau of dead coral from 10 to 20 feet (3^m0 to
15 6^m1) high. The eastern and southern sides of the island are fringed by a reef which extends in places to as far as 4½ cables offshore; on the south-western side of the island is a lagoon enclosed by a coral reef which extends to as much as one mile offshore; a reef extends about 3½ miles south-westward from the western side of this island about
20 3½ miles from its south-eastern end, and continues to project from one to 1½ miles from the island as far as the northern extremity. A sunken coral patch lies about 8 cables south-south-westward of the southern end of the island.

Giftûn Saghîr (Jifâtîn Seria), the south-western point of which is
25 situated about 5 cables eastward of the south-eastern point of Giftûn Kebîr, is hilly and attains an elevation of 330 feet (100^m6) near the middle of its eastern side; the island is fringed by a reef which extends 1½ miles north-westward of its northern extremity; the eastern side of this reef is steep-to. A T-headed pier, with a depth, in 1939, of
30 4 fathoms (7^m3) at its head, projects for a short distance from the south-western point of Giftûn Saghîr.

Abu Rimâthi, an islet, the northern end of which lies 9 cables southward of the south-eastern point of Giftûn Saghîr, is fringed by a coral reef which extends 4 cables south-south-westward of its southern
35 extremity; the northern end of this islet is a narrow point, 63 feet (19^m2) high.

Sha'ab Abu Rimâthi, lying about 2 miles south-westward of the southern extreme of Abu Rimâthi, is a sunken coral reef, and is reported not to be clearly visible.

40 Umm Agâwish (Umm Gowish), an islet, the northern point of which is situated about 3¾ miles south-westward of the south-western side of Giftûn Kebîr (*Lat.* 27° 14' N., *Long.* 33° 55' E.) and about 2 miles from the mainland, is 15 feet (4^m6) high and composed of dead coral; a ledge of sunken rocks lies about one mile eastward and 1½ miles south-
45 eastward of the eastern side of this islet, and a bank, with depths of from 4 to 6 fathoms (7^m3 to 11^m0) over it, extends north-eastward from this ledge to the coral reef extending from the south-western side of Giftûn Kebîr.

About 6 cables south-westward of the southern end of Umm Agâwish
50 is a low rocky islet situated on a reef.

Sha'ab el Lug, a long narrow coral reef, which dries, lies about one mile westward of the western extreme of Umm Agâwish; the centre of its western side is connected with the mainland by a spit, with depths of from one to 3 fathoms (1^m8 to 5^m5) over it. Shoals, with

Charts 757, 8a, 2523.

Chart 2838.

depths of 3 and 5 fathoms (5^m5 and 9^m1), are situated about half a mile and one mile, respectively, south-south-eastward of the southern end of this reef.

Chart 2838, with plan of Hurghada anchorage.

5

Abu Minqâr (Mingarh) island, situated on the reef which extends south-westward from the western side of Giftûn Kebîr, is flat, 6 feet (1^m8) high, composed of sand and coral, and divided into two parts by a narrow creek bordered with mangroves; its northern point is bare and its southern part covered with low bushes.

10

Gifâtîn (Jifâtîn) channel, the southern entrance to which lies between Shab el Lug and Umm Agâwish, extends for about 7½ miles in a northerly direction, and in its southern part has a least depth of 4 fathoms (7^m3); Minqâr channel, the northern part of Gifâtîn channel, lies between the mainland and the reef extending westward of Abu 15 Minqâr island. Minqâr channel, the southern and narrowest part of which is about 2 cables wide, has a least depth of 4 fathoms (7^m3) in the fairway.

Chart 2838.

The directions for navigating Gifâtîn and Minqâr channels are given 20 on page 117.

Anchorage.—Small vessels with local knowledge can obtain well-sheltered anchorage in mid-channel between Giftûn Kebîr and Giftûn Saghîr islands, in depths of from 7 to 16 fathoms (12^m8 to 29^m3), coral and sand, with the peak of the latter island bearing about 072°. 25 The width of this anchorage is from 1½ to 2 cables, and both shores are bordered by broad coral reefs, with several outlying rocks, which render a good look-out from aloft necessary in entering.

The northern entrance is so encumbered with reefs that it cannot be recommended.

30

During northerly winds good anchorage may be obtained by small vessels in depths of from 7 to 10 fathoms (12^m8 to 18^m3) close southward of the head of the pier extending from the south-western point of Giftûn Saghîr.

Chart 2838, plan of Hurghada anchorage.

35

There is comparatively well sheltered anchorage off Hurghada settlement (page 109) in depths of from 9 to 10 fathoms (16^m5 to 18^m3), with the managers house, bearing 316°, distant 2½ cables, and the eastern extreme of Franken point (*Lat.* 27° 14' N., *Long.* 33° 51' E.), bearing 358°; strong northerly winds raise a considerable sea here. 40

Chart 2838, with plan of approaches to South pier, Hurghada.

Hurghada.—**Piers.**—**Buoys.**—Two piers project from the coast about 1½ and 2½ cables, respectively, south-south-westward of Franken point; a large black hauling-off buoy is moored to the south of each of these piers. The northern pier is wooden and has a T head, and the 45 tank vessel usually berths alongside it. The southern pier, which is connected by flexible hoses to the pipe lines from the tanks, is 50 feet (15^m2) long, and had, in 1936, depths of 24 feet (7^m3) alongside its head; vessels berth alongside with an anchor to the south-east and a hawser from the stern to the southern hauling-off buoy. Both piers 50 are connected with Hurghada settlement, 2½ miles inland, by a light railway and a good motor road; water is laid on to the piers.

There is constant communication with Suez by the Anglo-Egyptian Oil Company's steamers, by means of which fresh provisions and water

Charts 2838, 757, 8a, 2523.

Chart 2838, with plan of approaches to South pier, Hurghada.
can be obtained. The settlement is in telegraphic communication with Suez.

For Meteorological tables, *see* page 50.

5 *Chart 2838.*

NORTH-EASTERN SIDE.—Ras Kenisa to Ras Muhammad.

—**Aspect.**—From Ras Kenisa the coast has an east-north-easterly direction for about $1\frac{1}{2}$ miles and thence trends south-eastward for about $3\frac{1}{2}$ miles to Ras el Millan, whence it trends a further 10 miles south-eastward to Qad Ibn Haddân (Kad el Hamden) and is bordered by reefs; from Qad Ibn Haddân the coast, which is bordered by reefs, trends $5\frac{1}{2}$ miles eastward and thence $4\frac{1}{2}$ miles south-eastward to Ras Muhammad.

The north-eastern side of the strait is a sandy plain extending to the 15 base of the high mountain range about 14 miles inland.

Gebel Mezra 'Iya (page 97), when seen from westward, has the appearance of an outcrop of rock with three small peaks lying about midway between the coast and the inland mountain range, and is conspicuous.

20 *Charts 2838, 8a.*

Ras Muhammad, the southern extremity of Sinai peninsula, is an abrupt broken cliff with a flat top, 90 feet (27^m4) high, descending to a low plain of gravel and decayed coral a little northward of the cape; it is the southern extremity of a peninsula, which is connected at its 25 north-western end, by a narrow isthmus, with the Sinai peninsula. Black hill, near the southern end of the isthmus, $2\frac{1}{2}$ miles north-westward of the cape, is black, rounded, and fairly conspicuous; a flat sand-coloured hill, nearly the same elevation, lies south-eastward of it. From south-westward, in mid-channel, these hills appear as islands, and 30 Tîrân island, in the entrance to the Gulf of 'Aqaba, about 19 miles north-eastward of the cape, shows over them. *See* view facing this page.

Chart 2838.

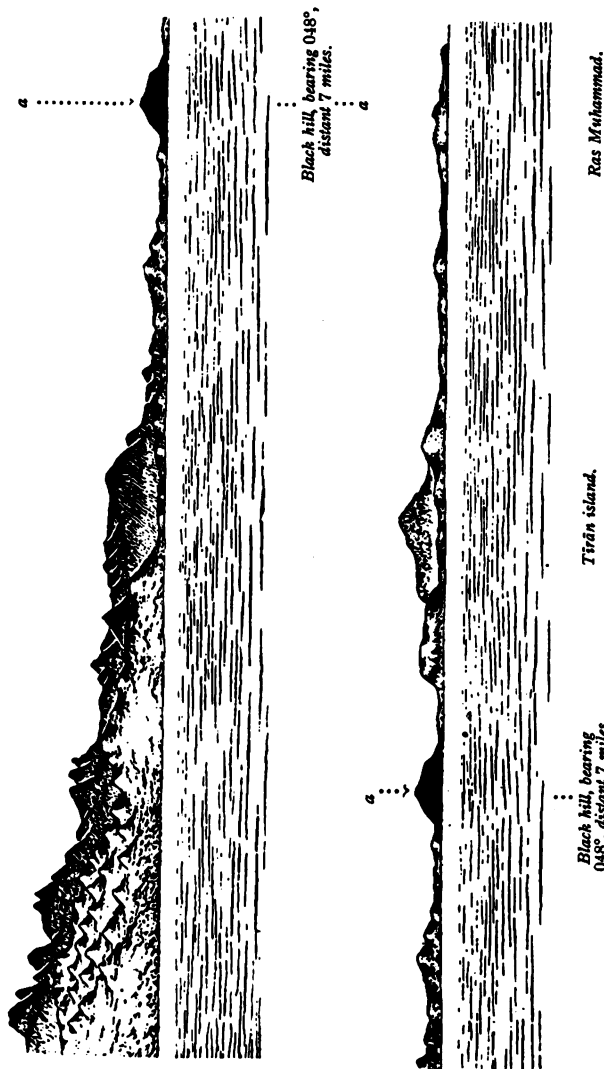
Northward of the isthmus it is hilly; Gebel Khashabi (Jebel Khashm 35 el Kelb), 1,069 feet (325^m8) high, is situated about $4\frac{1}{2}$ miles north-north-westward of Black hill (*Lat.* $27^\circ 45' N.$, *Long.* $34^\circ 14' E.$), and from it a mountainous ridge trends northward rising, at a distance of about $11\frac{1}{2}$ miles, in Gebel Sahara, to an elevation of 4,787 feet ($1,459^m1$).

40 **Inner channel.—Coast.—Dangers.**—The coast is bordered by coral reefs extending, in places, 8 miles offshore; little warning of approach to these reefs is given by sounding but during daylight the change in the colour of the water from deep blue to bright green is very noticeable.

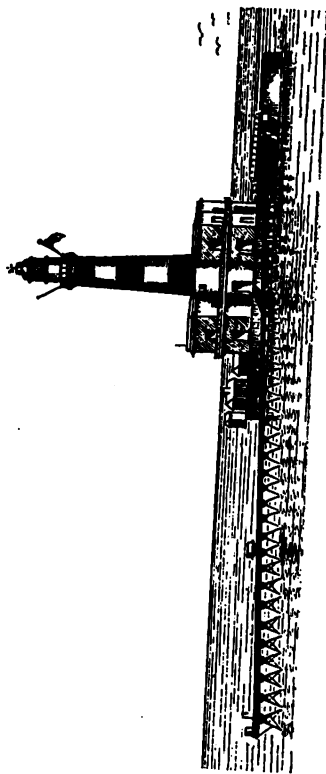
45 The Inner channel, between Sha'ab 'Ali and the dangers off-lying the coast south-eastward of Ras Kenisa, has moderate depths and may be safely used by day.

Sha'ab 'Ali, a sunken coral reef with numerous heads, lies from 3 to $7\frac{1}{2}$ miles offshore, with its northern end about 3 miles west-south- 50 westward of Ras Kenisa; Azov patch, situated on the eastern side of the northern end of Sha'ab 'Ali and about 2 miles south-westward of Ras Kenisa, has a depth of less than 6 feet (1^m8) over it; Shag rock, lying at the southern end of Sha'ab 'Ali, is 3 feet (0^m9) high.

Charts 757, 8a, 2523.



View, in two parts, of southern end of Sinai peninsula.
(Original dated 1918.)



Dædalus reef lighthouse, bearing 315° , distant 5 cables.
(*Original dated prior to 1832.*)

Chart 2838.

A stranded wreck, the position of which is approximate, lies on the western side of Sha'ab 'Ali, about $2\frac{3}{4}$ miles from its northern end; in 1936, the hull and funnel of this wreck were visible.

In thick weather vessels should give the western side of Sha'ab 'Ali a prudent berth as depths of 20 fathoms (36^m6) will be found within a short distance of it; depths of over 100 fathoms (182^m9) will be found about $1\frac{1}{2}$ miles south-eastward of its south-eastern end.

Marsa el Qâdi Yahya (Mersa tal Kad Yayah), between Ras Kenîsa and Ras el Millan, has several dangers lying in its entrance, and a coral reef extends about one mile east-south-eastward of Ras Kenîsa.

Sha'ab Rayis (Shab Ryeis), two coral patches, awash, lie from one to 2 miles south-south-eastward of Ras Kenîsa; eastward of the southern patch are two detached shoals, with a least depth of $1\frac{1}{4}$ fathoms (3^m2), and eastward of the northern patch are two detached shoals, with a least depth of $4\frac{1}{2}$ fathoms (7^m8).

Sha'ab ed Deqayeq (Shab Itiguyig), awash, extends $3\frac{1}{2}$ miles south-westward of Ras el Millan and thence about $3\frac{1}{2}$ miles northward; some detached sunken rocks, with depths of less than 6 feet (1^m8) over them, lie between the northern extremity of this reef and the shore northward; Sha'ab el Meqeeda (Shab el Megether) extends about $2\frac{1}{4}$ miles east-south-eastward from the middle of the southern side of the reef just described, and two detached 3-fathom (5^m5) patches lie close off its south-eastern end.

Marsa Zaraba (Mersa Towila) is a bight in the coastal reefs, about $3\frac{1}{4}$ miles south-eastward of Ras el Millan.

Caution.—A vessel approaching the Inner channel from north-westward must be careful to avoid Poynder shoal (page 100), and a good look-out should be kept for Azov patch and for detached rocks, especially near the northern entrance of this channel.

Anchorage in Inner channel.—There is anchorage generally in this channel in smooth water; temporary shelter can also be obtained off the southern end of Sha'ab 'Ali, near Shag rock (*Lat.* $27^{\circ} 46' N.$, *Long.* $33^{\circ} 53' E.$), in depths of from 15 to 20 fathoms (27^m4 to 36^m6).

Marsa el Qâdi Yahya, which is sheltered by the reef extending east-south-eastward of Ras Kenîsa, affords anchorage to vessels with local knowledge in depths of from 7 to 10 fathoms (12^m8 to 18^m3), mud, about $1\frac{1}{2}$ miles eastward of Ras Kenîsa and about 5 cables offshore.

The best channel into this bay lies between Sha'ab Rayis and the reef extending from Ras Kenîsa; it is about 3 cables wide. The channel eastward of Sha'ab Rayis is wider but is encumbered with shoals, rendering it intricate; it can be used, if necessary, with a good look-out aloft.

Small vessels with local knowledge may obtain anchorage south-eastward of Ras el Millan, in depths of from 2 to 4 fathoms (3^m7 to 7^m3), but this area is encumbered with coral reefs; it is sheltered from the south by Sha'ab el Meqeeda.

Marsa Zaraba affords sheltered anchorage to vessels with local knowledge in depths of from 5 to 8 fathoms (9^m1 to 14^m6), sand and coral. The entrance to this anchorage is between the two detached 3-fathom (5^m5) patches lying about $3\frac{1}{2}$ miles south-south-eastward of Ras el Millan and a coral reef about 4 cables farther eastward; this entrance, which has a least depth of 6 fathoms (11^m0) in the fairway, can be navigated safely with a good look-out aloft.

Charts 757, 8a, 2523.

Chart 2838.

Coast.—Dangers.—En Nighsh (Shab Serur), a crescent-shaped coral reef, lies from $2\frac{1}{2}$ to $4\frac{1}{2}$ miles westward of Qad Ibn Haddān; another coral reef, situated about 4 cables eastward of En Nighsh, extends about $2\frac{1}{2}$ miles south-south-eastward from the coastal reef.

Sha'ab Mahmūd (Shab Mahmoud), a detached sunken coral reef, extends south-eastward from a position about $1\frac{1}{2}$ cables southward of the southern end of the last mentioned reef; Beacon rock, known locally as Wusool Abu Mahmoud, situated at the south-eastern extremity of Sha'ab Mahmūd, is 2 feet (0^m6) high.

From about $1\frac{1}{2}$ miles north-westward of the southern extremity of Ras Muhammad, Sha'ab el 'Otāf extends in a west-north-westerly direction to a distance of about 5 miles offshore and there are many sunken coral rocks near its edges; coral rocks and shoal water extend about 7 cables westward of its western extremity.

Ras Muhammad should be approached with caution at night, as then the white cliffs and land are not very visible; it is steep-to and free from dangers southward and eastward.

Anchorage.—Vessels with local knowledge can obtain anchorage eastward of the south-eastern side of Sha'ab Mahmūd in depths of from 8 to 10 fathoms (14^m6 to 18^m3), sand and coral, with Beacon rock, bearing 203°, distant $1\frac{1}{4}$ miles, and Black hill, bearing 065°; care must be taken to avoid the dangers westward of Sha'ab el 'Otāf.

H.M.S. *Aphis* anchored, in 1942, about one mile from the eastern side of Qad Ibn Haddān, in a depth of 6 fathoms (11^m0), with Black hill, bearing 101°, and an 830-foot (253^m0) hill, situated about $10\frac{1}{2}$ miles north-westward of Black hill, bearing 351°.

DIRECTIONS.—Steam vessels, approaching the Strait of Gūbal from northward, should keep on the western side of the Gulf of Suez.

From about $2\frac{1}{2}$ miles north-eastward of Ras Zeit (*Lat.* 27° 56' N.; *Long.* 33° 31' E.) a vessel should steer to pass about 2 miles eastward of Ashrāfi lighthouse, thence about 2 miles north-eastward of Sha'ab Abu Nuhās, and when the north-western extremity of Shadwān island bears 215°, steer to pass about 2 miles eastward of the south-eastern part of that island.

A bearing of Ashrāfi light-tower enables a vessel to pass southward of Shag rock at the southern end of Sha'ab 'Ali; when approaching Sha'ab Mahmūd, a bearing of the round summit of Gūbal island enables a vessel to pass south-westward and southward of the reef.

Channels westward of Shadwān island.—As north-westerly winds prevail in this locality, steam vessels of small power may use these channels with advantage when proceeding northward. With a chart, and a good look-out aloft, there is no difficulty in the navigation, the difference in the colour of the deep water and that on the reefs being very apparent, except in a calm, or when the sun is ahead. See page 11.

These channels can be used by daylight only, but many convenient anchorages are available for use at night.

Charts 3752, plan of Shadwan channel; 2838.

Shadwān channel.—A vessel bound northward and using this channel should, from about 2 miles eastward of Gifṭūn Saghīr, shape course to pass about 3 miles eastward of Umm Gamar islet, and thence steer to pass about 2 miles eastward of the crescent-shaped reef lying

Charts 757, 8a, 2523.

Charts 3752, plan of Shadwan channel; 2838.

about $5\frac{1}{2}$ miles south-westward of the south-western side of Shadwân island, and about three-quarters of a mile south-westward of the reef on which is Siyûl Saghîra; the clearing marks leading eastward of the crescent-shaped reef mentioned above are given on page 104, and a vessel should not bring the south-western extremity of Shadwân island to bear more than 110° until Siyûl Kebîra bears 355° so as to pass south-westward of the reef extending north-westward of the north-western end of Shadwân island. The two low sandy eastern points of Tawîla island, in line, bearing about 330° , lead through the fairway, passing about 7 cables south-westward of the reef on which is Siyûl Saghîra; on this line part of the southern Geisûm island is visible between Tawîla island and the islets on the reef between Tawîla and Gûbal islands; if unable to distinguish these points, Umm Gamar islet, in line with Gifâtûn Saghîr peak, astern, bearing 158° , leads into the fairway of the channel westward of Siyûl Saghîra.

When Siyûl Kebîra bears 090° , course should be shaped to pass about midway between the western side of Sha'ab Umm 'Ush and the south-eastern end of Gûbal island, into the fairway of the Strait of Gûbal.

Caution.—In misty weather, by day, after experiencing a westerly set, if Gifâtûn islands are sighted on a north-westerly bearing they may be mistaken for Shadwân island. As it is deep eastward of these islands a vessel should, if in doubt, pass near enough to identify Shadwân island lighthouse, or the light at night, the non-existence of which would show that it was Gifâtûn islands (*Lat. $27^\circ 14'$ N., Long. $33^\circ 55'$ E.*).

Chart 2838.

Channels westward of Ashrâfi islands.—Should there be much sea in the Strait of Gûbal a vessel may obtain shelter by passing between Sandy islet and the northern end of the southern Geisûm island and thence through Kowarat channel or the northern part of Zeit channel, but these channels are intricate and necessitate a good look-out from aloft. The rocks on the southern side of the south-eastern entrance to the northern part of Zeit channel can not be plainly seen from aloft even under favourable conditions.

Zeit channel, the northern entrance to which lies between Umm el Kimân and Sha'ab Ashrâfi, is deep and is fairly free from dangers, but Geisûm (Gaysum) pass at its southern end is almost closed by reefs; from this channel small vessels with local knowledge can pass over the shoal bank between Sha'ab Ghânîm and the reef about $1\frac{3}{4}$ miles southward, taking care to avoid the reefs about one mile eastward of this bank, and thence proceed either northward to Ghubbet el Zeit or southward to Gernsa anchorage.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches; 2838.

Geisûm pass, between the reefs on which the Umm el Heimet islets lie and the reefs south-westward of the southern Geisûm island, is narrow, tortuous, and encumbered with reefs and rocks, as is Umm el Heimet (Mulhaimet) pass, westward of Umm el Heimet Saghîra, the south-eastern of the Umm el Heimet islets; the latter pass, connecting Zeit channel with Tawîla channel, extends from abreast the north-western Umm el Heimet islet to North Tawîla beacon, a distance of about $4\frac{1}{4}$ miles. These passes should be used only by small craft with local knowledge.

Charts 757, 8a, 2523.

Charts 3572, plan of Jemsa and Kabreit anchorages and approaches ; 2838.

- Tawila channel.—Gemsa and Kabrit anchorages.**—A vessel proceeding through Tawila channel and bound for either Gemsa or
 5 Kabrit anchorage should, from eastward of the northern end of the southern Geisûm island, steer southward through the fairway until the 6-foot (1^m8) islet on Sha'ab Gûbal bears 030°, when course should be altered to keep this islet, astern, on that bearing ; when the rounded
 10 summit of Gûbal island bears 059° course should be altered south-westward to keep it, astern, on that bearing, which leads through the passage, 4 cables wide, between Bahriya Tawila beacon and East Tawila buoy. When Bahriya Tawila beacon (*Lat.* 27° 36' N., *Long.* 33° 43' E.) is in line with the 100-foot (30^m5) dark brown conical hillock at the northern end of the southern Geisûm island, bearing
 15 014°, course should be altered southward, keeping this transit, astern, bearing 194°.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

- Gemsa anchorage should be approached by Tawila channel and thence by Bahriya (Vahari) pass, Deep pass, or South-West pass ;
 20 Bahriya pass, the eastern one, is not recommended, as the bottom is irregular. The approach to the anchorage does not appear to be suitable for large vessels.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches ; 757.

- 25 Deep pass, the best of these three passes, has a least width of 2 cables, and the channel leading north-westward to the anchorage is moderately deep and is free from dangers ; the reefs on both sides of the channel show well when the sun is shining on them. A flattish summit of the Ras el Gemsa hills in line with Gebel Ghârib, bearing about 307°,
 30 leads through Deep pass ; when the north-western point of Umm el Heimet Saghîra bears 000° a vessel should steer for it on that bearing until the south-eastern end of Ras el Gemsa hills bears 300°, when course should be altered north-westward, passing north-eastward of Middle reef.

- 35 *Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.*

Middle reef, lying about 3½ miles south-eastward of the south-eastern extreme of Ras el Gemsa, has, in places, depths of less than 6 feet (1^m8) over it.

- A conspicuous ruined house on the north-eastern side of Ras el
 40 Gemsa in line with a notched peak, bearing 298°, leads between Sha'ab Gemsa and Tail reef, about 3½ cables northward, passing close north-eastward of a group of shoals, which lies just within this passage and has a least depth of 13 feet (4^m0) over it ; to avoid these shoals a vessel should, after passing Tail reef, alter course northward and
 45 steer a north-westerly course until the southern end of Ras el Gemsa hills bears about 256°, when course may be altered for the anchorage.

- South-West pass, the entrance to which is situated about 3½ miles south-south-westward of the south-eastern end of Umm el Heimet Saghîra, has a least depth of 24 feet (7^m3) in the fairway ; the south-
 50 eastern end of this islet, bearing about 021°, leads through the fairway of the pass and, when the south-eastern end of the Ras el Gemsa hills bears 300°, course should be altered north-westward and a vessel can proceed as directed above. This pass is used for proceeding to Gemsa and Kabrit anchorages when the sun is well westward of the meridian.

Charts 2838, 757, 8a.

Chart 3752, plan of Jemsa and Kabreit anchorages and approaches.

Kabrit (Kabreit) pass, between Kabrit beacon and the north-western end of the reef lying about $7\frac{1}{2}$ cables east-south-eastward, has a least depth of 22 feet (6^m7) in the fairway. A vessel bound for Kabrit anchorage should steer through this pass with Bream point, the eastern extreme of Ras el Gemsa, bearing 338° , guarding against any set of the tidal stream towards the reef on the south-eastern side of the channel, until the south-western end of the Ras el Gemsa hills (*Lat.* $27^\circ 38' N.$, *Long.* $33^\circ 35' E.$) bears 318° , when course should be altered north-westward on this bearing, and the vessel proceed to the anchorage described on page 108. This anchorage can also be reached by entering one of the passes described above and then steering between the south-western side of Middle reef and the north-eastern side of the reef on the south-western side of the channel, but keeping closer to the latter.

Charts 3752, plan of Jemsa and Kabreit anchorages and approaches; 2838.

A stranger should not enter these passages unless he is sure of the landmarks. The best times for arriving at Gemsa are early in the morning, leaving a position eastward of Ashráfi light-tower when the sun is appearing above the mountains of Sinai peninsula, and about 1700, but at this latter time the glare of the sun may prevent the reefs being seen.

Chart 2838, with plan of Hurghada anchorage.

Gifâtîn and Mînqâr channels.—A vessel approaching Hurghada anchorage from northward should, from a position about three-quarters of a mile southward of Shadwân island, steer a south-westerly course towards the shore, passing about a quarter of a mile southward of Umm Gamar islet, until Dishet Abu Mînqâr bears 199° , when course should be altered southward keeping that hill in line with a high hill in the background, bearing 199° ; this transit should be kept until the piers of Hurghada are open eastward of Franken point, when a vessel can steer for the anchorage.

If coming from southward, a vessel should pass about one mile eastward of the Gifâtîn islands and about the same distance northward of the reef extending northward of Giftûn Kebîr; when Dishet Abu Mînqâr bears 199° , a vessel should proceed as directed above.

A vessel intending to proceed through Gifâtîn and Mînqâr channels from southward should, from a position about one mile eastward of Sa'l Hashîsh (Saal Hashish) islet, which is situated $10\frac{1}{4}$ miles south-south-eastward of the southern end of Dishet Abu Mînqâr, steer in a north-westerly direction until the Dishet Abu Mînqâr hills are seen between Umm Agâwish and the low rocky islet lying 6 cables south-westward. This low rocky islet should be kept bearing more than 310° until the western side of Umm Agâwish bears 010° , when course should be altered northward into Gifâtîn channel, passing about midway between the low rocky islet just mentioned and Umm Agâwish; care should be taken to avoid the north-eastern extreme of Sha'ab el Lug.

Caution is necessary when approaching Dishet Abu Mînqâr, as the coastal bank, with depths of from 2 to 3 fathoms (3^m7 to 5^m5) over it, extends 3 cables south-eastward of it, and is not so easily seen as the coral reef extending south-westward and westward of Abu Mînqâr island (*Lat.* $27^\circ 12' N.$, *Long.* $33^\circ 52' E.$); the passage here is the southern entrance to Mînqâr channel.

Charts 2838, 757, 8a, 2523.

Chart 2838, with plan of Hurghada anchorage.

It is preferable to navigate Minqâr channel with the sun behind one.

Minqâr channel widens a little farther northward, and a vessel proceeding through this channel to the Strait of Gûbal should reverse the
5 directions given above for a vessel proceeding southward.

Chart 2838.

Instead of proceeding out into the fairway of the strait, a vessel can steer to pass on either side of the reef lying 4 miles westward of Umm Gamar islet, taking care to avoid the 2-fathom (3^m7) shoal lying about
10 1½ miles north-north-eastward of the summit of Dishet Abu Hurghada and passing eastward of El Fanâdir islets. The passage eastward of the reef just mentioned is the better one as its south-eastern entrance is indicated by Umm Gamar islet ; a vessel taking this passage should, when clear of Minqâr channel, keep the summit of Dishet Abu Hurgh-
15 ada, astern, bearing about 189°, and well open eastward of El Fanâdir islets, until Umm Gamar islet bears 110°, when she should steer to pass on either side of the crescent-shaped reef lying about 6 miles south-westward of the south-western side of Shadwân island, into Shadwân channel, or pass south-westward of this crescent-shaped
20 reef, the reef lying about 2½ miles north-westward of it, and Sha'ab Tawîla, into Tawîla channel. Shadwân island, the round summit of Gûbal island, and the double peak of Gebel 'Esh will be found better for fixing the position than bearings of Tawîla island (*Lat.* 27° 35' N., *Long.* 33° 46' E.), which is low and flat.

Charts 757, 8a, 2523.

CHAPTER IV

THE CENTRAL PASSAGE OF THE RED SEA FROM THE STRAIT OF GŪBAL
TO ADEN, INCLUDING THE STRAITS OF BĀB-AL-MANDAB AND ADEN
HARBOUR

Charts 8a, 8b, 8c, 8d, 8e.

ISLANDS AND DANGERS IN THE CENTRAL PASSAGE OF THE RED SEA.—The following islands and dangers lie in the central passage of the Red sea, between the Strait of Gūbal and the Straits of Bāb-al-Mandab—The Brothers islets, Dædalus reef, Jabal at Tāir, Zubair islands, Avocet rock, 'Abu Ali (Abu Ail) islands, Zuqar and Hanish islands, the Haycocks, and Muhabbaka (Mohabbakah) islets. With the exception of the first two, they are all situated in the southern part of this sea.

Local weather.—See pages 37-41.

Charts 8a; 8b, with plan of The Brothers islets.

The Brothers islets.—**Light.**—The Brothers islets, known locally as El Fanadir, situated about 80 miles south-south-eastward of the south-eastern end of Shadwān island and about 32 miles from the south-western shore of the Red sea, consist of two almost steep-to coral islets, North islet and South islet, which are separated from each other by a channel about one mile wide. Both islets are fringed by coral reefs; this reef extends about three-quarters of a cable north-westward of the north-western end of North islet and a shoal spit, with a depth of 3 fathoms (5^m5) over it, extends about the same distance north-westward of the north-western extremity of South islet. Owing to abnormal refraction these islets have been seen from a distance of over 100 miles.

Chart 8b, plan of The Brothers islets.

On the south-eastern extremity of North islet (Lat. 26° 19' N., Long. 34° 51' E.) is a bollard to which vessels may secure during northerly winds, and an iron jetty, 180 feet (54^m9) long, extends from the middle of the south-western side of this islet to the edge of the reef.

A light is exhibited, at an elevation of 119 feet (38^m3), from a white circular tower on a rectangular dwelling, 102 feet (31^m1) in height, situated about the middle of North islet. See view on chart 8b.

Charts 8a, 8b.

Currents.—In August, 1933, H.M.S. *Suffolk* reported that a westerly current, with a rate of about 1½ knots, was experienced while on passage between Shadwān island and The Brothers islets; in

Chart 2523.

Charts 8a, 8b.

February, 1936, H.M.S. *Weston* experienced an easterly current, with a rate of nearly half a knot, whilst on passage from Tīrān island, which is situated at the entrance to the Gulf of 'Aqaba, to The Brothers islets, and H.M.S. *Fleetwood*, when on passage to these islets from Shadwān island, in July, 1938, experienced a north-easterly set of about two-thirds of a knot.

When passing these islets, especially at night, it is advisable to give them a fairly wide berth as a cross current often sets westward in their vicinity.

Chart 8b, with plan of Dædalus reef.

Dædalus reef.—**Light.**—**Jetty.**—Dædalus reef, lying about 100 miles south-south-eastward of The Brothers islets and about 45 miles from the south-western shore of the Red sea, is composed of coral and sometimes dries during the low level period of this sea but is always covered during the high level period; it is steep-to and may be passed on either side.

A light is exhibited, at an elevation of 100 feet (30^m5), from a circular stone tower, painted in black and white horizontal bands, on a double-storied dwelling, situated on Dædalus reef, about 1½ cables within its south-eastern end.

An iron jetty extends southward from the light-tower to the edge of the reef. *See view facing page 113.*

For Meteorological tables, *see page 51.*

Current.—In May, 1934, between Dædalus reef and The Brothers islets, H.M.S. *Veronica* experienced a current setting north-eastward, with a rate of about three-quarters of a knot.

Charts 143, 2523.

Jabal at Tāir.—Jabal at Tāir, an island lying about 660 miles south-south-eastward of Dædalus reef and about 47 miles from the eastern shore of the Red sea, is 800 feet (243^m8) high; it rises gradually to the base of a range of hills, about 500 feet (152^m4) high, and from the top of this range to the peaks. The larger and central peak is brown and the other is conical in shape on some bearings; there is a steep rocky yellow bluff on the south-eastern side. The island is of recent volcanic origin and composed chiefly of lava; sulphurous jets exist at the summit but for many years no smoke has been seen issuing.

Chart 143.

From north-westward and south-eastward, this island (*Lat. 15° 33' 40 N., Long. 41° 50' E.*) appears high and conical, sloping gradually towards the coasts (*see view below and view facing this page*); it is steep-to and is a good landmark. The usual course by the central track passes about 1½ miles south-westward of Jabal at Tāir, the

*Li. Ho.*

Jabal at Tāir, bearing 353°, distant 9 miles.

(Original dated 1906.)

weather being seldom so thick as to prevent it being seen by day or its light by night.

A large shed containing water tanks, which being the same colour as

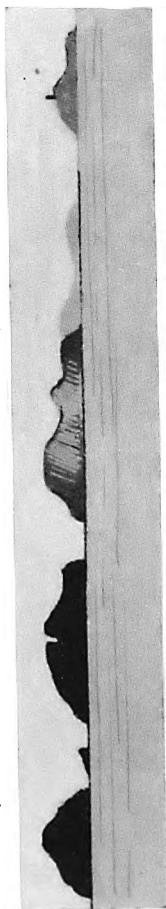
Charts 8d, 2523.

To face page 120.



Jabal at Tair lighthouse, bearing 140° , distant 10 miles.

(Original dated 1906.)



Haycock Is.,
bearing 187° ,
distant 23
miles.

Rugged Is.

Saddle Is.

Centre Peak Is. old Li. Ho.,
bearing 144° , distant
31½ miles.

Zubair islands from north-westward.

(Original dated 1927.)

Chart 143.

the surrounding rock, is most inconspicuous, stands on the southern side of the island, and there are some water tanks for the use of the light-house-keepers on the beach northward of the lighthouse.

There is good landing on the rocks near the shed containing the water tanks from the beginning of May till early in September ; there is also good landing, with good shelter from south-south-easterly winds, from September to the end of April, near the water tanks northward of the lighthouse. 5

Abnormal magnetic variation.—In December, 1932, H.M.S. 10 *Ormonde* reported abnormal magnetic variation in the vicinity of Jabal at Tāir, a maximum deflection of the compass needle of $1\frac{1}{2}^{\circ}$ to the right of the normal having been observed in a position close westward of this island ; no abnormal magnetic variation was observed at a distance of over 5 miles westward of the island. 15

In August, 1934, H.M.S. *Hastings* reported abnormal magnetic variation close south-eastward of the island.

Charts 143, 8d.

Banks.—A patch, with a depth of 19 fathoms (34^m7) over it, which has not been closely examined, is situated about 13 miles north-eastward of the north-eastern end of Jabal at Tāir (*Lat.* $15^{\circ} 33' N.$, *Long.* $41^{\circ} 50' E.$), and a small bank, with depths of 60 fathoms (109^m7), lies about 16 miles northward of the northern end of the island. The coastal banks, with depths of less than 100 fathoms (182^m9) over them, lie about 11 miles eastward and 10 miles westward of this island, and 25 within the outer edges of these banks it is dangerous for navigation. **Chart 143.**

Currents.—A current, setting north-westward and north-north-westward at a rate of about 2 knots, has been experienced for five days, from about 12 to 16 miles northward and eastward of Jabal at Tāir ; 30 a strong south-south-easterly wind was blowing at the time.

In December, a current, setting eastward at a rate of about one knot, has been experienced between Jabal at Tāir and the Zubair islands, the wind at the time and for two days previously being light and the sea smooth ; a similar current has also been experienced on other occasions 35 when passing Jabal at Tāir and as far as 15 miles northward of it. In May, 1934, between Jabal at Tāir and the Zubair islands, H.M.S. *Veronica* experienced a current setting north-eastward at a rate of about one knot. Towards the end of May the general set of the current 40 between these islands and the coastal bank from about 7 to 10 miles eastward has been observed to be between north-west and north-north-east with a rate of from a quarter of a knot to one knot. In June little or no current has been experienced in this area.

Light.—A light is exhibited, at an elevation of 531 feet (161^m8), from a red circular iron tower with a white lantern, 65 feet (19^m8) in 45 height, situated on the western side of the summit of Jabal at Tāir.

Anchorage.—**Beacon.**—From the beginning of May to the end of August, with the prevailing north-westerly and west-north-westerly winds, anchorage may be found off the southern side of Jabal at Tāir.

A conspicuous white stone beacon, 8 feet (2^m4) in height, is situated 50 on the coast about 50 yards (45^m7) westward of the shed containing the water-tanks on the southern side of the island ; it was reported, in 1934, that this beacon had been destroyed and replaced by an unpainted wooden structure. The best berth is found by approaching with this

Chart 143.

beacon, bearing 305° , and anchoring, in a depth of 16 fathoms (29^m3), with the eastern and western extremes of the island bearing 062° and 273° , respectively. The nearest danger, which has a depth of 3 fathoms (5^m5) over it, lies 4 cables from this position. Discoloured green water appears to extend from some distance offshore, the bottom of this patch being white sand, but no depth of less than $5\frac{1}{2}$ fathoms (10^m1) has been found over it. There is very little current at this anchorage.

Vessels have been known to anchor northward and also westward of the lighthouse (*Lat. $15^{\circ} 32' N.$, Long. $41^{\circ} 49' E.$*) but it is not advisable as the depths are considerable.

A boat landing place, the approach to which was, in 1935, marked by two posts, is situated near the beacon described above.

Charts 453, plan of Zubair islands; 143.

15 Zubair islands.—Zubair islands, a group of islands, islets and rocks, the north-westernmost of which, Quoin islet, is situated $23\frac{1}{2}$ miles south-south-eastward of the south-eastern side of Jabal at Tāir and about 32 miles from the eastern shore of the Red sea, extend for about 13 miles in a south-south-easterly direction; this group is rugged and almost devoid of vegetation, with the exception of Saba island, about 9 miles south-eastward of Quoin islet, on which there are a few stunted bushes. See view facing page 120.

Chart 453, plan of Zubair islands.

Quoin islet, which is not easily seen at night, being only 100 feet (30^m5) high, is wedge-shaped, and is steep-to to within a distance of 2 cables; a rock above water lies close west-south-westward of the south-western and highest part of this islet. Quoin islet is situated on the north-eastern part of a bank, which has a least depth of 25 fathoms (45^m7) over it; about 7 cables westward of this bank is a bank, with 30 a least depth of 48 fathoms (87^m8).

Haycock island, the north-western end of which lies about $3\frac{1}{2}$ miles east-south-eastward of Quoin islet, is almost steep-to; there is a deep channel, about one mile wide, between it and Rugged island south-south-westward. Between Quoin islet and Haycock island there are 35 two banks with least depths of 9 and 19 fathoms (16^m5 and 34^m7) over them, respectively.

Rugged island, Table Peak island, the northern end of which is situated about 5 cables south-eastward of the southern end of Rugged island, Saddle island, the northern end of which is about 4 cables south-40 westward of the southern end of Table Peak island, and Low island, $2\frac{1}{2}$ cables southward of the southern end of Saddle island, lie on a rocky bank which extends about $7\frac{1}{2}$ cables north-north-westward of the northern end of Rugged island and the same distance north-eastward of Table Peak island, about 9 cables eastward of Saddle and Low islands, 45 and about 6 cables south-south-eastward of the southern end of Low island; a small group of rocks, the highest of which is 83 feet (25^m3) high, is situated about $4\frac{1}{2}$ cables west-north-westward of the north-western side of Saddle island, and a rock, 26 feet (7^m9) high, lies $4\frac{1}{2}$ cables eastward of the southern end of Low island. These islands are 50 fringed by banks, with depths of less than 3 fathoms (5^m5) over them, which, in places, extend to a distance of $2\frac{1}{2}$ cables offshore.

Saba island, the north-western extremity of which lies about $2\frac{1}{2}$ miles east-south-eastward of Low island, is low and sandy, with two conspicuous hills, both having craters; it is bordered by a coral reef which

Charts 143, 8d, 2523.

Chart 453, plan of Zubair islands.

extends 9 cables south-westward of its southern extreme, and at the southern edge of this reef is the rugged-topped Connected island; Shoe rock is situated on the south-eastern edge of the reef about $2\frac{1}{2}$ cables north-eastward of Connected island. Saba island has two lagoons connected with the sea and fringed by mangroves. 5

Zubair island (*Lat. $15^{\circ} 04' N.$, Long. $42^{\circ} 10' E.$*), the north-western point of which is situated 7 cables east-south-eastward of the eastern extreme of Saba island, has a central hilly range extending from the northern end of the island to its southern end; North peak, 6 cables from the northern end of the island, is square-shaped; the 734-foot (223^m7) hill, about $3\frac{1}{2}$ cables northward of the southern end of the island, is the summit of this range and has a conical shape. 10

Centre Peak island, the southernmost of the Zubair group, lies with its north-eastern extreme 5 cables south-westward of the south-western part of Zubair island; it rises from a rocky coast to three hills, the highest of which, 566 feet (172^m5) high, on which stands a disused lighthouse, is situated $4\frac{1}{2}$ cables northward of the southern end of the island. Centre Peak island is steep-to. On the beach of the small bay on the south-western side of this island are some water-tanks for the use of the lighthouse keepers. 15 20



Centre Peak island disused lighthouse, bearing 045° , distant 2 miles.

(Original dated 1906.)

Outlying dangers.—Clearing marks.—Middle reef, with depths of less than 6 feet (1^m8) over it, situated about 2 miles east-south-eastward of the south-eastern point of Table Peak island, is narrow, composed of coral, and steep-to; the sea breaks over it when there is any swell. 25

The eastern extreme of Connected island in line with the 495-foot (150^m9) hill on Centre Peak island, bearing 167° , leads westward of this reef.

East rocks, lying about $2\frac{1}{2}$ miles north-north-eastward of the north-eastern point of Zubair island, consist of one rock, 5 feet (1^m5) high, and a rock, with a depth of less than 6 feet (1^m8) over it, about one cable north-westward, over which the sea often breaks; this reef is steep-to within a distance of one cable. 30

Williamson shoal, about 8 cables north-eastward of the north-eastern point of Zubair island, is rocky and has a least depth of $5\frac{1}{2}$ fathoms (10^m1) over it. 35

Evans rock, about one mile south-eastward of the south-eastern point of Zubair island, is a pinnacle with a depth of 4 fathoms (7^m3), lying near the centre of a bank which has depths of from 10 to 20 fathoms (18^m3 to 36^m6) over it. A small steep-to coral shoal, with a depth of 3 fathoms (5^m5), lies about 8 cables south-westward of Evans rock. 40

Shark shoal, lying about $2\frac{1}{2}$ miles south-eastward of the south-eastern point of Centre Peak island (*Lat. $15^{\circ} 01' N.$, Long. $42^{\circ} 10' E.$*), has a least depth of 7 fathoms (12^m8), coral; there are often tide-rips in the vicinity of this shoal. 45

Charts 143, 8d, 2523.

Chart 453, plan of Zubair islands.

South shoal, situated about $1\frac{1}{2}$ miles south-eastward of the southern extreme of Centre Peak island, is a coral bank, with a least depth of 14 fathoms (25^m6).

Chart 143.

Penguin shoal, situated $10\frac{1}{2}$ miles, east-south-eastward of the south-eastern point of Zubair island, is a small steep-to rocky patch, with a depth of $3\frac{1}{2}$ fathoms (6^m4) over it; this locality has not been closely examined and, as there may be other similar shoals in this neighbourhood, the passage eastward of the Zubair islands is not recommended.

Chart 453, plan of Zubair islands.

Light.—A light is exhibited, at an elevation of 518 feet (157^m9), from a masonry tower with a balcony, surmounting a one-storied house, situated at the south-eastern end of Centre Peak island. This light was extinguished, in 1945.

Anchorage.—From the beginning of May to the end of August, during the prevailing north-westerly winds, anchorage may be obtained, in a depth of 12 fathoms (21^m9), mud, with Centre Peak island disused lighthouse bearing 240° , distant half a mile. During August vessels should not lie at this anchorage during the night, as squalls of wind and rain from south-eastward sometimes occur at sunset.

At other times of the year, with south-south-easterly winds, anchorage may be found, in depths of from 8 to 10 fathoms (14^m6 to 18^m3), in the middle of the channel between Saba and Zubair islands, with the eastern extreme of Saba island bearing 000° , the northern extreme of Zubair island bearing 071° , and Shoe rock in line with the northern part of Connected island, bearing about 251° ; this channel has a least width of about $1\frac{1}{2}$ cables in the fairway. With south-westerly winds, which are frequent during the winter, this anchorage is open to wind and sea and is not then recommended.

*Chart 143.***Rock and bank between the Zubair islands and Zuqar island.**

Avocet rock, about 51 miles south-eastward of the southern end of Centre Peak island and 18 miles from Zuqar island, lies $8\frac{1}{2}$ miles eastward of the usual track through the Red sea; the rock consists of a coral patch with a depth of less than 6 feet (4^m6), and is steep-to.

A bank, with a depth of 18 fathoms (32^m9) over it, was reported, in 1892, to lie about 18 miles north-north-westward of the north-western side of Zuqar island, but its position is doubtful.

Currents.—In the vicinity of Avocet rock and Ras Mujāmila, $18\frac{1}{2}$ miles north-eastward, little or no current has been experienced during October, November and December, although southerly winds were blowing almost constantly.

H.M.S. *Dahlia* reported that, in 1929, between Zuqar island (Lat. $14^\circ 00' N.$, Long. $42^\circ 45' E.$) and the Hanish islands, to the west, and the Arabian coast, to the east, during strong southerly and south-south-easterly winds, which are prevalent in the winter, easterly sets of upwards of one knot were frequent.

Chart 453, plan of Abu Ail channel.

Abu 'Ali islands.—Abu 'Ali (Abu Ail) islands, a group of islands and islets lying from about $2\frac{1}{4}$ to $3\frac{1}{4}$ miles north-eastward of the north-eastern side of Zuqar island, are barren, and being whitish-brown in colour are, therefore, not easily seen at night; this group is bordered by reefs and rocks extending in places to a distance of half a cable off-

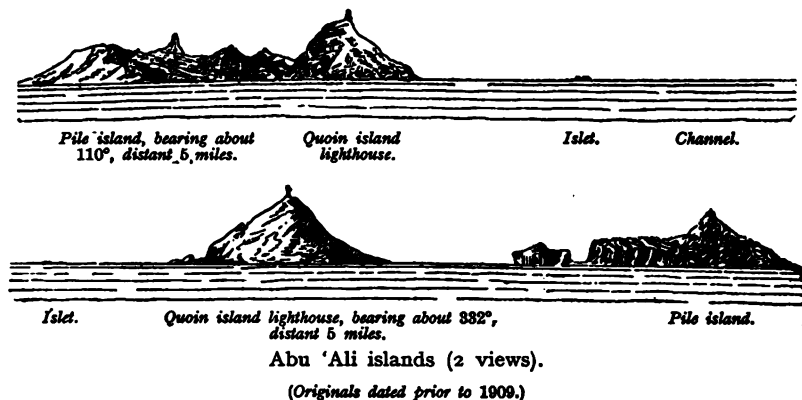
Chart 453, plan of Abu Ail channel.

shore. There are some water-tanks, situated near the lighthouse on Quoin island, for the use of the lighthouse keepers.

An islet, 6 feet (1^m8) high, the northern extreme of which is situated 1½ cables south-south-westward of the western extreme of Quoin island, has some sunken rocks lying close off its northern and southern ends and shoal water extending about 1½ cables eastward of its southern extremity; the channel between this islet and the south-western side of Quoin island should not be used for navigation.

Pile island, the north-western extreme of which lies about 1½ cables north-eastward of the north-eastern side of Quoin island, is inaccessible and is fringed by rocks and reefs on its northern and western sides; its eastern side is almost steep-to.

Light.—A light is exhibited, at an elevation of 384 feet (117^m0), from a red circular iron tower with a white lantern and dwelling, 65 feet (19^m8) in height, situated on the summit of Quoin island.



Anchorage.—There is good and safe anchorage, during the prevailing north-north-westerly winds from the middle of May to the middle of December, in a depth of 9 fathoms (16^m5), sand and coral, with Quoin island lighthouse bearing 270°, distant 3 cables, but squalls of wind and rain from south-eastward sometimes occur in August and vessels should not then remain at this anchorage. Landing on the eastern side of Quoin island is especially good at high water.

At other times of the year this anchorage is not safe, and landing has to be made northward of the lighthouse; in strong south-easterly winds there is good landing, in smooth water, on a ledge on the northern side of the island.

Abu 'Ali channel.—Abu 'Ali (Abu Ail) channel, between the north-eastern side of Zuqar island (*Lat. 14° 00' N., Long. 42° 45' E.*) and the south-western side of Abu 'Ali islands, is deep and free from dangers in the fairway; vessels using it should keep in the middle of this channel, bearing in mind that the tidal streams here are very irregular and occasionally set across it. It should also be remembered that at night or in hazy weather the high land of Zuqar island often has a peculiar distant appearance, and that East point, being low with white sand behind it, may then resemble water and not be identified until dangerously close to it.

Chart 453, plan of Jabal Zuqar and Hanish islands.

Zuqar and Hanish islands.—The islands comprising this group mostly rise to volcanic hills of a dark brown aspect, with rocky eminences of various shapes, covered with loose, granular, black, brown, or sand-coloured earth and ashes, or strewn with pieces of sharp rock. Zuqar island and Great Hanish island are the principal ones, and there are many smaller. In some of the largest the craters are evident, having the appearance of formerly being high peaks, reduced to their present shape by internal explosions.

10 Charts 453, plan of Jabal Zuqar and Hanish islands ; 143.

A chain of islands, islets, and rocks extends from the southern end of Zuqar island to Ras Darma, 43 miles south-south-westward, Sayal islet, situated 6 miles from the cape, being the southernmost.

Charts 453, plans of Abu Ail channel and Jabal Zuqar and Hanish islands.

15 Zuqar island rises to lofty hills of barren aspect, which on some bearings appear as sharp peaks ; the highest peak is situated about $3\frac{1}{4}$ miles southward of North point, the northern extremity of the island. North point is low and sandy, and has a few green bushes near it.

20 This island has no permanent inhabitants, but is visited by fishermen, generally between February and June.

The northern side of Zuqar island is bordered by a reef, which, westward of North point, extends to as far as 5 cables offshore ; West point, the western extreme of the island, and all the points on the

25 western, southern and eastern sides of the island, as far northward as East point, its eastern extreme, can be approached to a distance of $2\frac{1}{2}$ cables.



Zuqar island, from northward.

(Original dated 1890.)

Chart 453, plan of Abu Ail channel.

Between North and East points the coast is fringed by a reef which *30* extends to as far as one cable offshore ; East point is low and rocky ; a shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6), which was reported, in 1883, lies about 2 cables east-north-eastward of East point, and a bank, with a least depth of 12 fathoms (21^m9) over it, lies about $1\frac{1}{4}$ miles east-south-eastward.

35 High island, the southern end of which is situated about $6\frac{1}{2}$ cables northward of North point, is steep-to within a distance of one cable.

Chart 453, plan of Jabal Zuqar and Hanish islands.

Shark island (*Lat. $13^{\circ} 58' N.$, Long. $42^{\circ} 42' E.$*), the northern end of which is about $2\frac{3}{4}$ miles south-south-eastward of West point, lies about *40* one mile offshore, with a rock awash close off its north-western extremity and a sunken rock close off the middle of its eastern side ; its south-western side is fringed by a reef. Near island, the south-western side of which is about 8 cables east-south-eastward of the south-eastern point of Shark island, lies with its northern extreme about half a cable south-*45* south-westward of a projecting point of the south-western coast of Zuqar island ; it is steep-to within a distance of one cable.

Charts 143, 8e, 2523.

Chart 453, plan of Jabal Zuqar and Hanish islands.

Tongue island, the eastern extreme of which is situated about $2\frac{1}{2}$ miles west-south-westward of the south-western point of Zuqar island, with a deep channel, free from dangers, between, is semi-circular in shape. About 2 cables from its southern side lies a low rock connected by sunken rocks with the south-western extremity of the island and enclosing a basin which has a least depth of 6 fathoms (11^m0); boats can enter this basin through a passage in its eastern side, which has a least depth of $1\frac{1}{2}$ fathoms (3^m2) in it. 5

Little Hanish island, the north-western point of which is situated about $1\frac{1}{2}$ miles south-south-eastward of the southern end of Zuqar island, the channel between being deep and free from dangers, is hilly and rugged, with grass in places, but its summit is not easily distinguished; approaching from either northward or southward, a peak, 532 feet (162^m2) high, on the eastern side of the island, about one mile south-south-westward of its north-eastern end, is conspicuous and, when observed from the south-west, resembles a small peak in the act of falling and is named Tumble-down peak. A group of rocky islets, lying from about $1\frac{1}{2}$ to 9 cables north-eastward of the north-eastern end of Little Hanish island, is situated on a shallow flat which connects it with the island and extends about $2\frac{1}{2}$ cables north-north-eastward of the islets. 10 15 20

Low island, the western extremity of which is situated about 4 cables south-eastward of the north-eastern side of Little Hanish island, has a bank, with a least depth of 4 fathoms (7^m3) over it, extending about $2\frac{1}{2}$ cables northward of its northern end and on it an islet about half the height of Low island; about one cable from the south-eastern side of Low island is a small rock, 35 feet (10^m7) high, and Fawn rock, nearly awash, is situated about $1\frac{1}{2}$ cables east-south-eastward of this rock; a chain of rocks and a narrow islet lie from about half a cable to 7 cables south-south-westward of the southern end of Low island, and a bank, with a depth of 8 fathoms (14^m6) over it, is situated about 2 cables southward of the southern end of this islet. A small rocky patch, with a depth of 7 fathoms (12^m8) over it, lies about $1\frac{1}{4}$ miles east-south-eastward of the 35-foot (10^m7) high rock, but although this was the least depth found during the survey, less depths may exist, and Low island should, therefore, be given a wide berth. 25 30 35

Great Hanish island (*Lat. $13^{\circ} 44' N.$, Long. $42^{\circ} 44' E.$*), the northern extreme of which is situated about $3\frac{1}{2}$ miles southward of the southern extreme of Little Hanish island, is separated from it by a deep channel which is free from dangers; it is hilly, with deep valleys between some of the hills, the highest peak, which is situated near the middle of the island, appearing on some bearings as a conspicuous bluff. A low strip of sand crosses the island about 3 miles from its south-western end and, the land on both sides of it being high, that part of the island to the south-west of this strip appears, from a distance, on north-westerly and south-easterly bearings, as a separate island. In 1938, there was a police post on the south-eastern coast of this island, about $3\frac{1}{2}$ miles from its southern extremity. 40 45

A trough, with depths of over 100 fathoms (182^m9), and from about one to $1\frac{1}{4}$ miles wide, lies from a quarter of a mile to $1\frac{1}{4}$ miles north-westward of the south-western part of Great Hanish island; this part of the island is steep-to. 50

Haycock island, the south-western side of which is situated about

Charts 143, 8e, 2523.

Chart 453, plan of Jabal Zugar and Hanish islands.

2½ cables north-eastward of the north-eastern end of Great Hanish island, from southward resembles a haycock but from close eastward appears to be hollowed out like a saucer ; the channel between Great
5 Hanish and Haycock islands has a least depth of 8 fathoms (14^m6) in the fairway but a rock, with a depth of less than 6 feet (1^m8) over it, lies about one cable from the south-western side of Haycock island.

Peaky islet, the north-eastern end of which is about 1½ miles west-south-westward of the south-western side of Haycock island, lies
10 about 4 cables from the north-western side of Great Hanish island.

Marescaux rock, lying about 2½ miles west-south-westward of the south-western end of Peaky islet and 1½ miles from the north-western side of Great Hanish island, has a depth of less than 6 feet (1^m8) and the sea generally breaks over it ; this rock has not been examined and
15 its position should be avoided.

South-West rocks, situated about 4½ miles south-westward of the south-western end of Great Hanish island, comprise a rock, 22 feet (6^m7) high, formed of tufa, with a rock, above water, and a sunken rock, close off its eastern side ; they are steep-to.

20 Addar Ail islets, lying about one mile east-north-eastward of the eastern extreme of Haycock island, form a circle with a basin within them to which there is a small opening from southward ; there is a deep channel, free from dangers, between these islets and Haycock island.

25 Mushajjara (Mushējera) islet, situated about 1½ miles east-south-eastward of Addar Ail islets, can be approached on its western and southern sides to a distance of 2 cables but a reef extends about 2½ cables north-eastward and 2 cables eastward of it and, the islet being only 24 feet (7^m3) high, it is not easily seen at night ; a bank, with a least depth of
30 6 fathoms (11^m0) over it, lies about 4 cables north-north-westward of this islet.

North Round island (*Lat. 13° 43' N., Long. 42° 48' E.*), the northern end of which is about 3½ miles southward of the southern end of Haycock island, lies about 1½ miles from the south-eastern side of Great
35 Hanish island ; Quoin island lies with its western extreme about 5 cables eastward of the eastern extreme of North Round island. The channels between North Round and Great Hanish islands and between North Round and Quoin islands are free from dangers.

Chor rock, the north-eastern extreme of which is situated about
40 2½ miles south-westward of the south-western point of North Round island, lies on a flat which extends about 1½ miles east-south-eastward from the south-eastern coast of Great Hanish island and 7 cables eastward of Chor rock ; this flat has depths of from 2 to 12 fathoms (3^m7 to 21^m8) over it. Some black rocks lie off the north-western point of
45 Chor rock.

Round island, the northern end of which is situated about 2½ miles south-south-eastward of the southern end of North Round island, is dark in appearance.

Double Peak island, the northern end of which lies about 1½ miles
50 southward of Chor rock, is steep and has two small peaks close together ; shoal water, with depths of less than 5 fathoms (9^m1), extends about 2½ cables north-eastward of the north-eastern end of the island, and at the north-eastern edge of this shoal water are two small rocks above water ; the south-western end of Double Peak island is fringed

Charts 143, 8e, 2523.

Chart 453, plan of Jabal Zuqar and Hanish islands.

by a coral reef. Mid islet, the northern end of which is about $2\frac{1}{2}$ cables southward of the south-eastern point of Double Peak island, lies in the middle of the passage between that island and Suyūl Hanish island; the channels between Double Peak island and Mid islet and between Mid islet and Suyūl Hanish island are free from dangers and have least depths of 4 and 9 fathoms (7^m3 and 16^m5) in them, respectively. Suyūl Hanish island is rugged. 5

Pin rock, a small rock, 12 feet (3^m7) high, is situated $1\frac{3}{4}$ miles west-north-westward of the south-western extremity of Suyūl Hanish island; Cust rock, about 6 cables west-north-westward of Pin rock, has a depth of less than 6 feet (1^m8) over it. These rocks lie on a bank with depths of from 11 to 20 fathoms (20^m1 to 36^m6) over it, but there are depths of from 4 to 7 fathoms (7^m3 to 12^m8) within a distance of 2 cables northward of Pin rock. 10

The channel between the south-eastern side of Great Hanish island and the north-western sides of Double Peak and Suyūl Hanish islands is free from dangers, with the exception of Chor, Pin and Cust rocks. 15

Rocky islets (*Lat.* $13^\circ 38' N.$, *Long.* $42^\circ 47' E.$), situated about $1\frac{3}{4}$ miles east-south-eastward of the south-eastern side of Double Peak island, consist of three black rugged islets and some small rocks, lying near the southern end of a bank which has depths of from 4 to 20 fathoms (7^m3 to 36^m6) over it and extends for about $1\frac{1}{4}$ miles in a south-south-westerly direction. 20

Parkin rock, situated about 2 miles east-south-eastward of Rocky islets, is 11 feet (3^m4) high and small; caution is necessary when near this rock, if it is not sighted, as the depths being regular until close to it no warning is given of its proximity. 25

Ship rock, about one mile south-westward of the south-western end of Suyūl Hanish island, has a depth of less than 6 feet (1^m8) over it, lies on a bank which has a least depth of 4 fathoms (7^m3) over it and which extends about 3 cables northward and southward of this rock. 30

Three Foot rock, lying about $2\frac{1}{2}$ miles south-westward of the south-western extremity of Suyūl Hanish island, is small, 3 feet (0^m9) high, steep-to, and formed of lava. 35

Currents and tidal streams.—The tidal streams around Zuqar island are very irregular, but they appear to set along its coasts. At the anchorage off the north-western end of the island, the tidal streams have been observed to set south-westward, at a rate of $2\frac{1}{2}$ knots, during the rising tide, and north-eastward during the falling tide. 40

In the channel between Little Hanish and Low islands the tidal streams set southward from about high water in Abu 'Ali channel until about $4\frac{1}{2}$ hours before the next high water there.

H.M.S. *Dahlia*, when at anchor in this channel on 29th March, 1927, observed that a current of about one knot set continuously northward during her stay of 9 hours, whereas the stream would have been expected to set southward for the last 4 hours of that period. The wind was south-south-easterly, force 1—2. 45

The currents around Haycock island are strong; there is an eddy off the coast of Great Hanish island southward of Haycock island, and a current setting north-eastward, at the rate of about one knot, has been experienced here. A current, setting south-south-eastward, at a rate of $1\frac{1}{2}$ knots, has been experienced off Three Foot rock, in May. 50

In February, 1932, H.M.S. *Penzance*, when passing westward of

Chart 453, plan of Jabal Zuqar and Hanish islands.

Great Hanish island and between North-East Haycock and Three Foot rock, experienced a current setting north-westward at a rate of from $1\frac{1}{4}$ to $1\frac{1}{2}$ knots.

- 5 The tidal streams set northward, with a rising tide, off the eastern coast of Great Hanish island (*Lat. $13^{\circ} 44' N.$, Long. $42^{\circ} 44' E.$*), and set strongly southward, with a falling tide, off the south-western coast of that island; off Haycock island they set south-eastward with a falling tide. There are tide-rips between Haycock island and Mushajjara islet.

10 *Chart 453, plan of Abu Ail channel.*

Anchoragees.—Shelter can be obtained by small vessels from southerly winds in a bay on the north-eastern side of Zuqar island, about $3\frac{1}{2}$ cables north-westward of East point and $2\frac{1}{2}$ cables offshore, but a swell sets into this anchorage.

- 15 There is good shelter for large vessels from southerly winds in depths of about 11 fathoms (20^m1), sand and coral, with the summit of Quoin island bearing about 084° and just open northward of North point, a dark square tomb situated near the coast, about $1\frac{1}{2}$ miles west-south-westward of North point, bearing 187° , and the summit of Zuqar island bearing 166° . This anchorage is $2\frac{1}{2}$ cables from the coastal reef and northward of an opening in it within which boats can pass and lie securely; the opening is narrow and should only be used with local knowledge.

Chart 453, plan of Jabal Zuqar and Hanish islands.

- 25 There is anchorage, generally, in depths of from 7 to 10 fathoms (12^m8 to 18^m3), from 2 to 4 cables off the reefs bordering the north-western side of Zuqar island, and in depths of from 17 to 26 fathoms (31^m1 to 47^m5), about 5 cables off, but the bottom is rocky.

- 30 South bay, on the south-western side of Zuqar island, affords good anchorage; the best anchorage is in the north-western part of this bay, in a depth of about 8 fathoms (14^m6), midway between the northern part of Near island and the coast of Zuqar island eastward, with the northern extreme of Near island bearing 289° . The anchorage in the eastern part of the bay is in a depth of about 35 12 fathoms (21^m9), coral, with a point about 6 cables east-south-eastward of the northern extreme of Near island in line with the northern extreme of that island, bearing 294° , and the south-eastern entrance point of the bay bearing 191° . There are a few straggling huts on the coast and, in 1938, there was a police post here.

- 40 There is also anchorage, in depths of from $5\frac{1}{2}$ to 6 fathoms (10^m1 to 11^m0), sand and coral, in the bay at the southern end of Zuqar island, about one cable eastward of the western entrance point; the reefs fringing the shores of the bay can generally be seen.

- There is anchorage, sheltered from southerly winds, in depths of 45 from 12 to 15 fathoms (21^m9 to 27^m4), in the channel between the north-eastern end of Little Hanish island (*Lat. $13^{\circ} 52' N.$, Long. $42^{\circ} 48' E.$*) and the northern end of Low island, with the southern part of the narrow islet to the south of Low island bearing 187° and just open westward of the western extreme of that island, and the 25-foot (7^m6) 50 islet off the northern end of Low island, bearing 049° ; farther southward anchorage can be obtained in depths of from 18 to 20 fathoms (32^m9 to 36^m6) with the north-eastern point of Little Hanish island bearing 347° and its south-eastern extreme bearing 227° .

Anchorage, well sheltered from southerly winds and sea, can also be

Charts 143, 8e, 2523.

Chart 453, plan of Jabal Zugar and Hanish islands.

obtained northward of Little Hanish island, in depths of from 7 to 11 fathoms (12^m8 to 20^m1), with the 532-foot (162^m2) peak bearing 180°, and the horseshoe-shaped islet, close north-eastward of the north-eastern extremity of Little Hanish island, bearing 090°; this anchorage is reported to be preferable to those in the channel. 5

In January, 1935, H.M.S. *Hastings* found anchorage, sheltered from southerly winds, in a depth of 10 fathoms (18^m3), sand and coral, with good holding ground, about 5 cables east-south-eastward of Peak islet.

The depths off the south-eastern side of Great Hanish island, outside the coastal reef, are fairly regular, and there are some anchorages sheltered from northerly winds. One is situated 1½ miles southward of Haycock island and 6 cables offshore, in depths of from 7 to 12 fathoms (12^m8 to 21^m9), with the western extreme of Haycock island bearing about 353° and just open eastward of the north-eastern extreme of Great Hanish island; another is about 2½ cables offshore, in depths of about 11 fathoms (20^m1), with Chor rock bearing 183° and the southern extreme of Quoin island bearing 080° and just open southward of the southern extreme of North Round island. There is also anchorage in a depth of 11 fathoms (20^m1) with the southern extremity of Chor rock bearing 082° and the 539-foot (164^m3) peak on Great Hanish island, about 1½ miles west-north-westward of Chor rock, bearing 347°. The best anchorage is about 6 cables offshore, in depths of from 14 to 18 fathoms (25^m6 to 32^m9), with the south-western extremity of Double Peak island bearing 135° and the south-eastern extremity of Great Hanish island bearing 238°. 10 15 20 25

South-East bay, at the south-western end of Great Hanish island, affords anchorage in a depth of about 18 fathoms (32^m9), sand and coral, about 2 cables west-south-westward of the eastern entrance point. 30

The Haycocks.—The Haycocks consist of three islets, North-East Haycock, Middle Haycock and South-West Haycock, of which Middle Haycock, the highest, is cone-shaped and is conspicuous.

Light.—A light is exhibited, at an elevation of 196 feet (59^m7), from an octagonal masonry tower, 26 feet (7^m9) in height, situated on the summit of South-West Haycock. 35

Chart 143.

Muhabbaka islets.—The Muhabbaka (Mohabbakah) islets (*Lat.* 13° 27' N., *Long.* 42° 35' E.), lying from about 5 to 12 miles southward of South-West Haycock, consist of four islets, High islet, Flat islet, Harbi islet and Sayal islet, named in order from northward; they have a white appearance, caused by bird droppings, which at times renders it difficult to identify them. It is deep in the vicinity of these islets. 40

Flat islet, about 3 miles south-south-westward of High islet, has a large hole in its northern end which is conspicuous on certain bearings; the surface of this islet is white and low. Harbi islet, about 6½ miles east-south-eastward of Flat islet, rises vertically from the sea; Sayal islet, about 5 miles southward of Flat islet and the same distance west-south-westward of Harbi islet, is rocky. 45

Charts 8a, 8b, 8c, 8d.

DIRECTIONS.—The central passage through the Red sea from the Gulf of Suez as far southward as Jabal at Tâir is free from dangers but the direct course passes much nearer the eastern than the western 50

Charts 143, 8e, 2523.

Charts 8a, 8b, 8c, 8d.

side of the sea ; it is, therefore, advisable to steer from near the Dædalus reef for a position in lat. $17^{\circ} 00' N.$, long. $40^{\circ} 40' E.$, which lies about midway between the coastal banks, and thence a vessel can steer
5 for Jabal at Tāir.

Chart 143.

A vessel using the central track should keep in depths of over 100 fathoms (182^m9) until about 28 miles from Zuqar island if making for Abu 'Ali channel, but if intending to pass westward of that island
10 she should not proceed into depths of less than 100 fathoms (182^m9) until westward of the northern end of Great Hanish island.

A vessel proceeding southward, when passing south-westward of the Zubair islands should, if a strong southerly wind is blowing, give them a berth of at least one mile as the set of the swell is then towards this
15 group ; strong southerly winds are sometimes prevalent from November to April inclusive.

From a position about $2\frac{1}{2}$ miles south-westward of Centre Peak island a vessel, if bound through the Abu 'Ali channel, should shape course for the peak of Zuqar island and, when Zuqar island is distant about
20 18 miles, course should be altered to pass about $1\frac{1}{4}$ miles north-eastward of High island, bearing in mind that strong currents occasionally set across the Red sea.

From Abu 'Ali channel the track leads south-south-eastward to the Straits of Bāb-al-Mandab, passing about $2\frac{1}{2}$ miles eastward of Low
25 island and Fawn rock and 4 miles eastward of Mushajjara islet.

The westward track mentioned above leads about half a mile westward of South-West Haycock and thence south-eastward to the Straits of Bāb-al-Mandab, passing about $3\frac{1}{2}$ and $5\frac{1}{4}$ miles north-eastward, respectively, of High and Harbi islets.

30 *Charts 3180, 143.*

NORTHERN APPROACH TO STRAITS OF BĀB-AL-MANDAB.—The northern approach to the Straits of Bāb-al-Mandab is bounded, on the west, by the coast of Africa, between Ras Darma (page 126) and Ras Si Ane (*Lat. $12^{\circ} 28' N.$, Long. $43^{\circ} 20' E.$*), about
35 63 miles south-eastward, and on the east, by the coast of Arabia, between the town of Mokha (Mocha), about 41 miles eastward of Ras Darma, and Ras Bāb-al-Mandab, about 41 miles south-south-eastward of Mokha.

Chart 143.

40 **WESTERN SIDE.**—**Ras Darma to Ras Luma.**—**Aspect.**—From Ras Darma the coast trends about 14 miles south-eastward to Ras Dugai and thence about 2 miles east-south-eastward to Ras Lumà, the western entrance point of Baia di Assab ; it is low and is fringed by a reef which, in places, extends to as much as one mile offshore.

45 A small range of hills, from 50 to 80 feet (15^m2 to 24^m4) high, about 7 miles south-south-eastward of Ras Darma, lie from one to $1\frac{1}{2}$ miles inland.

Jebel Aduali or Assab hill, situated about 18 miles south-south-westward of Ras Darma, is the highest peak in this locality ; a range
50 of well defined and conspicuous peaks extends from it towards the town of Assab, about 17 miles eastward, and is also connected with the high land southward of Baia di Beilul, the bay on the western side of Ras Darma.

Charts 8d, 8e, 2523.

Chart 143.

Monte Taghi, situated about $3\frac{1}{2}$ miles westward of Ras Dugai, is conical; Monte Sella, lying about 3 miles south-south-westward of the same cape, is high, dark and conspicuous; Monte Marcale, about 11 miles westward of Monte Sella, resembles Monte Sella from some directions but is much more towering, being 2,275 feet (693^m4) high, and part of the higher inland range which, from Monte Sella, increases in elevation westward until it culminates in Jebel Aduali.

The general aspect of the land from Ras Darma to Ras Dumeira, about 46 miles south-eastward, is high, rugged and mountainous 10 towards the interior, barren towards the coast, and descending in several ranges, successively lower.

Chart 8e, plan of Baia di Assab.

Off-lying islet and dangers.—Sanah-bor, a conspicuous islet about $1\frac{1}{2}$ miles northward of Ras Dugai, is bordered by a coral bank 15 which extends about $3\frac{1}{2}$ cables northward, 5 cables eastward, 7 cables southward and 4 cables south-westward of it, leaving a channel, about $3\frac{1}{2}$ cables wide, with depths of from 6 to 8 fathoms (11^m0 to 14^m6), between it and the coastal bank southward. A detached patch, with a depth of 14 feet (4^m3) over it, lies about one mile south-eastward of 20 Sanah-bor and 5 cables offshore.

Bosanquet shoal, situated about $4\frac{1}{2}$ miles north-eastward of Ras Lumà, consists of sand and broken shells, with a least depth of 17 feet (5^m2) over it; this shoal is indicated by discoloured water. Secca Fieramosca, lying about 8 miles north-eastward of the same point, is 25 composed of coral and has a least depth of 3 fathoms (5^m5).

A sand and coral ridge, known as Secche Scilla, lies with its north-western extremity about 10 miles northward of Ras Dahànnaba (*Lat.* 12° 54' N., *Long.* 43° 00' E.), the eastern entrance point of Baia di Assab, and extends for about 7 miles in a south-easterly direction; 30 this ridge, which has a least depth of 13 feet (4^m0) over it, should not be approached from seaward within a depth of 20 fathoms (36^m6) in hazy weather.

Current.—In the vicinity of Secche Scilla the current is strong and generally sets in a parallel direction to this ridge but at certain times 35 towards it; near a detached shoal, with a depth of 2 fathoms (3^m7) over it, situated about $4\frac{1}{2}$ miles northward of Ras Dahànnaba, the current has been observed to attain a rate of 4 knots during strong south-easterly winds.

Baia di Assab.—Beacon.—The coast between Ras Luma and Ras 40 Dahànnaba, about 17 miles east-south-eastward, is low, sandy and swampy, and forms a bay named Baia di Assab, which affords good sheltered anchorage; Assab town stands on the north-western shore of the bay and Margabelah village lies about $1\frac{1}{2}$ miles inland and 6 $\frac{1}{2}$ miles southward of Assab. 45

The shores of this bay are mostly fringed by a coastal reef, and the land round the inner part of the bay is inundated at high tides.

Ras Buja, about $1\frac{1}{2}$ miles southward of Ras Luma, is a point just northward of the town, and on it is an old fort which is difficult to distinguish; the monument of Giuletti and Biglieri, a dark stone 50 obelisk situated about half a cable south-westward of the old fort, is conspicuous, and there is a signal station about $1\frac{1}{2}$ cables south-south-eastward of this monument.

A mole projects one cable from the shore in a south-south-easterly

Chart 8e, plan of Baia di Assab.

direction about 2 cables south-south-westward of Ras Buja ; about $1\frac{1}{2}$ cables inland from this mole is the Residency, a conspicuous white building with a flagstaff.

- 5 Ras Caribale, about $1\frac{1}{2}$ miles south-south-westward of Ras Buja, has several buildings on it, amongst which a large iron store house on the extremity of the point is the most conspicuous object in the bay when seen from seaward ; a mole projects about $1\frac{1}{2}$ cables south-eastward from Ras Caribale, and a light railway connects this mole with
10 the salt pans one mile south-westward.

There is a beacon at the north-western end of Ras Dahannaba.

Chart 143.

- Ambarughli Kebir, situated about 8 miles south-south-eastward of Margabelah and $4\frac{1}{4}$ miles inland from the south-western shore of the
15 bay, and Ambarughli Saghir, lying $2\frac{3}{4}$ miles east-north-eastward of Ambarughli Kebir, are two isolated conical hills, both being conspicuous.

Chart 8e, plan of Baia di Assab.

- Baia di Assab is to a large extent protected from swell by the islands
20 and islets encumbering the bay but during the north-east monsoon strong south-easterly winds, which prevail during the day, cause a swell which inconveniences boats.

- Lights.**—A light is exhibited, at an elevation of 52 feet (15^m8), from a white framework structure with black stripes, 44 feet (13^m4)
25 in height, situated on Ras Gombo (*Lat. $13^{\circ} 01' N.$, Long. $42^{\circ} 45' E.$*), about one mile south-south-eastward of Ras Luma.

- A light is exhibited, at an elevation of 95 feet (29^m0), from a circular masonry tower, painted in black and white horizontal bands, 87 feet (26^m5) in height, situated on Ras Fatma, about $7\frac{1}{2}$ miles eastward of
30 Ras Gombo light. Close alongside this light-tower is the old light-structure.

- Light-buoys.**—Two light-buoys, each exhibiting a *green flashing* light, are moored about $1\frac{1}{4}$ miles south-south-eastward and $1\frac{1}{4}$ miles southward of Ras Gombo light-structure, respectively, and about
35 $3\frac{1}{4}$ cables offshore.

- Islands and dangers.**—**Buoys.**—**Beacons.**—Fatma, an island, on the north-eastern end of which is Ras Fatma light-tower, is low and wooded, and attains an elevation in Ras Fatma, its north-eastern extremity, of 50 feet (15^m2) ; the northern, western and southern
40 coasts of this island are fringed by a reef which extends, in places, to as far as 2 cables offshore, and from the south-eastern side of the island a reef extends about 7 miles south-eastward ; Dercos, an islet situated near the south-eastern end of this latter reef, is wooded. Shoal water, with depths of less than 5 fathoms (9^m1), extends about 8 cables north-
45 westward of the north-western side of Fatma and to a distance of about $3\frac{1}{4}$ cables south-westward of its south-western side.

- From about $2\frac{1}{4}$ to $3\frac{1}{4}$ miles south-westward of the north-western extreme of Fatma, Heri and Umm al Sciora, two similar islets, lie on coral reefs which extend about one cable northward of the northern
50 side of Heri and $2\frac{1}{2}$ cables south-eastward of its south-eastern end, also about 3 cables north-north-westward of the northern end of Umm al Sciora and about $5\frac{1}{2}$ cables southward of its southern end ; shoal water, with depths of less than 5 fathoms (9^m1), extends to as far as $1\frac{1}{2}$ miles northward of the northern ends of these two islets.

Charts 143, 8e, 2523.

Chart 8e, plan of Baia di Assab.

Umm al Baher consists of two sandy islets lying on a coral reef about $1\frac{1}{2}$ miles eastward and south-eastward, respectively, of Ras Caribale; this reef extends to as far as 3 cables from the eastern sides of these islets and shoal water, with depths of less than 3 fathoms (5^m5), extends about $3\frac{1}{2}$ cables northward of the northern islet. A shoal, with a depth of 2 fathoms (3^m7), lying about 5 cables west-north-westward of the western extreme of the northern islet, is marked on its north-western side by a conical buoy, and a rock, with a depth of less than 6 feet (1^m8) over it, lying about $2\frac{1}{2}$ cables south-eastward of the head of the mole at Ras Caribale and about one mile from the western side of the same islet, is marked on its northern side by a can buoy.

Gurna, an islet situated about $1\frac{1}{2}$ miles eastward of the eastern sides of Umm al Baher, is fringed by a reef and shoal water, with depths of less than 3 fathoms (5^m5), extends about 2 cables northward and southward of its northern and southern ends, respectively.

Darmakia (*Lat. $12^\circ 58' N.$, Long. $42^\circ 49' E.$*), an island, the western extreme of which is situated about 7 cables south-south-eastward of the southern end of Gurna, is wooded; it is fringed by a reef which extends about 9 cables north-north-westward of its northern end, an islet lying near the northern end of this reef. Umm al Assel, an islet, the northern end of which lies about $8\frac{1}{2}$ cables south-south-eastward of the southern end of Darmakia, is fringed by a reef which extends $1\frac{1}{2}$ cables eastward and south-eastward of its eastern side; shoal water, with depths of less than 3 fathoms (5^m5), extends about 2 cables northward of its northern end and $2\frac{1}{2}$ cables southward of its southern end.

Aureikiya, an island, the western side of which lies about 6 $\frac{1}{2}$ cables eastward of the eastern side of Darmakia, is fringed by a reef.

Haleb, an island, the north-western end of which is situated about $2\frac{1}{2}$ miles eastward of the eastern side of Aureikiya, extends for about $7\frac{1}{2}$ miles in a south-south-easterly direction to within about $1\frac{1}{4}$ miles of the mainland and is mostly fringed by a reef; it is low and is partly covered with jungle. An islet, named Huiheb, which is fringed by a reef, lies close north-westward of the north-western end of Haleb.

Two beacons are situated on Haleb, one on its north-eastern coast about 3 miles from the north-western extremity of the island and the other near its south-western coast, about $1\frac{1}{4}$ miles south-westward of the first beacon.

The head of the bay is encumbered with several sandy islets, which are mostly covered with jungle and are all fringed by coral reefs.

The coastal reef extends about $4\frac{1}{2}$ miles north-north-westward of Ras Dahannaba and, from its northern extremity, its outer edge trends about 9 miles south-eastward to Ras Sintian; some islets, which are low and wooded, lie on the north-western side of this reef. Ras Macaua, the northern end of these islets, is marked by a stone beacon on a triangular base, 37 feet (11^m3) in height, and surmounted by a black spherical iron cage; the coastal reef extends about $3\frac{1}{2}$ cables northward of this beacon.

Between this part of the coastal reef and Secche Scilla are several shoals, with depths of less than 3 fathoms (5^m5), the positions of 50 which can best be seen on the chart.

Channels leading into the bay.—Buoy.—Canale di Margabelah, between Umm al Baher, on the west, and Umm al Sciora and Gurna, on the east, is the best channel leading into the southern part of the bay

Chart 8e, plan of Baia di Assab.

and has depths of from 5½ to 9 fathoms (10^m1 to 16^m5) in the fairway.

The channel westward of Aureikiya has a least depth of 5½ fathoms (9^m6) in it; the channel between Aureikiya, to the west, and Huiheb and Haleb, to the east, has a least depth of 5½ fathoms (10^m5) in the fairway.

Canale Rubattino, between Huiheb (*Lat.* 12° 59' N., *Long.* 42° 53' E.) and Haleb, to the south-west, and Fatma and Dercos, to the north-east, has a least depth of 19 feet (5^m8) in the fairway but patches, with depths of from 7 to 15 feet (2^m1 to 4^m6) over them, render this channel intricate; the south-eastern entrance to this channel is between Ras Macaua and the reef extending south-eastward of Dercos, and the south-western side of this part of the channel is marked by a can buoy.

15 Prohibited anchorage.—Anchorage is prohibited in the area between the coast and the line joining the two light-buoys moored southward of Ras Gombo light-structure; navigation is, however, permitted through this area up to a distance of about 220 yards (201^m2) from the light-buoys.

20 Caution.—In case of accident, and with the permission of the Harbour Master, vessels may secure alongside the mole, bearing in mind that it is prohibited to cross the line joining the two light-buoys moored southward of Ras Buja; when a vessel is manoeuvring to go alongside or is leaving the mole, all other craft must keep clear of the area between the mole and these two light-buoys.

Anchorage.—There is good anchorage in depths of from 7 to 8 fathoms (12^m8 to 14^m6), off Assab town, eastward of the prohibited anchorage, with the flagstaff, on Ras Buja, bearing about 315°, also farther southward in Buja road, in about the same depths.

30 There is also anchorage in depths of from 4 to 6 fathoms (7^m3 to 11^m0), mud, sheltered from all winds, southward of Umm al Assel; a good berth is about one mile offshore, eastward of Margabelah village.

Charts 8e, plan of Baia di Assab; 143.

Directions.—Approaching from northward (*see* view facing page 138) a vessel should keep about 3 miles off the coast southward of Ras Darma and shape course to pass about 2 miles eastward of the islet of Sanah-bor, which leads midway between it and Bosanquet shoal, and when the islet bears 270° a vessel should steer to pass about one mile off the western side of the bay until Ras Gombo light-structure bears 246° when course may be altered southward for the anchorage.

Chart 8e, plan of Baia di Assab.

From eastward, Monte Sella, bearing 241°, leads about 1½ miles south-eastward of Secca Fieramosca and about 1½ miles north-westward of the shoal water extending north-westward of the north-western end of Fatma; when Ras Gombo light-structure bears 235° a vessel should alter course southward for the anchorage. Alternatively a vessel may approach with Sanah-bor bearing 270°, which leads between Secca Fieramosca and the shoal water north-westward of Fatma, until Monte Sella bears 241°, when a vessel should steer for it on that bearing and proceed as previously directed.

A vessel entering the bay, passing between Ras Macaua (*Lat.* 12° 57' N., *Long.* 42° 59' E.) and Dercos and thence through Canale Rubattino, should, from seaward, whilst in depths of not less than 20 fathoms (36^m6), bring Ras Macaua beacon, which is conspicuous and visible from

Chart 8e, plan of Baia di Assab.

a distance of over 6 miles, to bear 258° and steer for it on that bearing, which leads about 8 cables southward of the 17-foot (5^m2) patch near the south-eastern end of Secche Scilla, in a least depth of 26 feet (7^m9). When about $3\frac{1}{2}$ miles from this beacon a vessel should alter course west-north-westward so as to pass northward of the shoal, with a depth of 2 fathoms (3^m7), lying about 2 miles east-north-eastward of Ras Macaua beacon ; after passing northward of this shoal a vessel should bring the beacons on Haleb in line, bearing 225° , which leads through the fairway of the south-eastern entrance to Canale Rubattino. This channel is intricate and liable to change and should never be attempted except with local knowledge. 5 10

Assab.—The town of Assab, had a population, in 1935, of about 5,700. The principal part of the town, to the south of Ras Buja, includes a number of white stone buildings, amongst which are the 15 Residency, the Government offices, the hospital and the prison ; the remainder of the town consists of huts.

Some lighters and a motor launch are available.

Radio station.—A radio station is situated about three-quarters of a mile south-westward of Ras Buja ; the radio masts are conspicuous. 20
Chart 3180.

Ras Sintian to Ras Si Ane.—**Aspect.**—From Ras Sintian the coast trends about $8\frac{1}{2}$ miles south-south-eastward to Ras Dumeira and thence about $17\frac{1}{2}$ miles south-eastward to Ras Si Ane ; it is fringed by a coral reef making landing difficult. Caution is necessary if approaching within a depth of 20 fathoms (36^m6), as this locality has not been closely examined. 25

Raheita, a bluff, situated about 7 miles south-eastward of Ras Sintian, extends about 5 cables east-north-eastward from the coast ; it is black in appearance, with a white sand patch on its northern slope, and is a good landmark ; it generally shows up well in hazy weather. Raheita village lies about 2 miles westward of the bluff and one mile inland. 30

A small conical hill and another small hill with a curious projection north-westward lie close to the coast between Raheita and Ras Dumeira ; neither of these hills is charted. 35

Ras Dumeira is a small rocky bluff promontory with two or three small reddish conical summits, one of which is flat ; these summits resemble camel humps. A low sandy plain extending about 10 miles westward from Ras Dumeira gives this promontory, from a distance, the appearance of an island. From a certain distance eastward the cape is completely obscured by Dumeira, an island lying about half a mile eastward. 40

From the coast a low sandy plain extends to the mountains, the summits of which lie from 10 to 14 miles inland, and are much indented with numerous peaks. Vegetation begins about $1\frac{1}{2}$ miles inland, becoming dense towards the interior and also southward. There is a considerable growth of bush close to Ras Si Ane (*Lat. $12^{\circ} 29' N.$, Long. $43^{\circ} 19' E.$*). 45

Charts 3180, 2523.

Jebel Abu Lulu, situated 14 miles west-south-westward of Ras Dumeira, is a tableland, with an isolated cone, called Mount Ann, close to its south-eastern side ; Monte Potosi, lying about 27 miles westward of Jebel Abu Lulu, is very steep, has two clefts and is a good landmark. 50

Charts 143, 6b, 8e, 2523.

Chart 3180.

Massif du Ada-Ali, the easternmost summit of which has a triangular shape, is situated about 9 miles south-eastward of Mount Ann and 10 miles inland ; Massif du Maghaira, the continuation westward of
 5 Massif du Ada-Ali, lies with its north-eastern peak, Sommet du Maghaira, about 5 miles westward of the easternmost summit of Massif du Ada-Ali ; Pic Andoli Nord, about $1\frac{1}{4}$ miles west-south-westward of Sommet du Maghaira, is a conspicuous pointed peak which should not be confused with Pic Andoli Sud, a slightly higher peak about half a
 10 mile farther southward and the southernmost peak of Massif du Maghaira ; Massif du Ribira lies with its summit, Sommet Ribira, about $9\frac{1}{2}$ miles south-eastward of the easternmost summit of Massif du Ada-Ali and $7\frac{1}{4}$ miles from the coast.

Some of the mountains are covered with coarse, granular, black and
 15 lightish-brown earth.

Coast.—Off-lying islands and dangers.—A shoal, with a depth of $4\frac{1}{2}$ fathoms (7^m8) over it, is situated about $1\frac{1}{2}$ miles northward of Raheita and $1\frac{1}{4}$ miles offshore.

A shoal, with a least depth of $3\frac{1}{2}$ fathoms (5^m9) over it, lies about
 20 $1\frac{1}{2}$ miles north-north-eastward of Ras Dumeira ; when there is much sea it is clearly visible by the change in the colour of the water.

The coastal reef extends as far seaward as an imaginary line joining the extremities of Raheita and Ras Dumeira and it should not be approached, even by vessels of light draught, within a depth of
 25 5 fathoms (9^m1).

The rise and fall of the tide completely change the configuration of the coast between Raheita and Ras Dumeira.

On the northern side of Ras Dumeira is a small creek with a sandy beach where landing can be effected from boats at all seasons.

30 The island of Dumeira is bordered by a reef which extends to as far as $3\frac{1}{2}$ cables eastward of its eastern extremity ; Scoglio Callida lies at the eastern edge of this reef. The island shows up well in hazy weather.

Dumeira, Mouleleh, and Der Eloua are three villages situated on the
 35 coast about $5\frac{1}{2}$, $9\frac{1}{2}$, and $10\frac{1}{2}$ miles south-south-eastward, respectively, of Ras Dumeira.

Récif Mouleleh, lying about $2\frac{1}{2}$ miles north-north-westward of Ras Si Ane, dries near its south-eastern end ; on this reef are two small rocks, each of which is 7 feet (2^m1) high.

40 Ras Si Ane (*Lat. $12^\circ 29' N.$, Long. $43^\circ 19' E.$*), the south-western point of the Straits of Bāb-al-Mandab, is the eastern extremity of a promontory extending north-north-westward from the coastline, the northern side of which, rising to a reddish volcanic peak, is rocky and precipitous ; this promontory is connected with the mainland by
 45 a low neck of land. On its western side is a bay, which dries, and in which is a white above-water rock called Récif Si Ane ; the shores of this bay are bordered by mangroves. The coastal bank, with depths of less than 5 fathoms (9^m1), extends about one mile south-eastward of this promontory.

50 Jezirat Seba, lying from about $2\frac{1}{2}$ to $7\frac{1}{2}$ miles eastward of Ras Si Ane, is a group of six steep rocky islets of volcanic formation, which are fringed by reefs over which the sea breaks ; these islets, named in order from westward, are called Ile de l'Ouest, Ile Double, Ile Basse, Ile Grande, Ile de l'Est, and Ile du Sud. They are brownish in colour,

Charts 143, 6b, 8e, 2523.

To face page 138.



Assab town.

Monte Taghi.

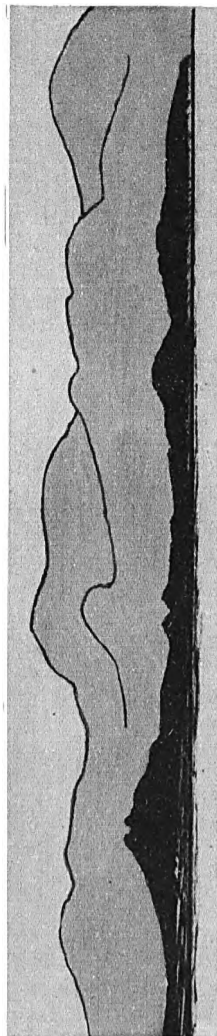
*Sevash-bor,
bearing 281°,
distant 4 miles.*

Northern approach to Baia di Assab.

(Original dated 1900.)

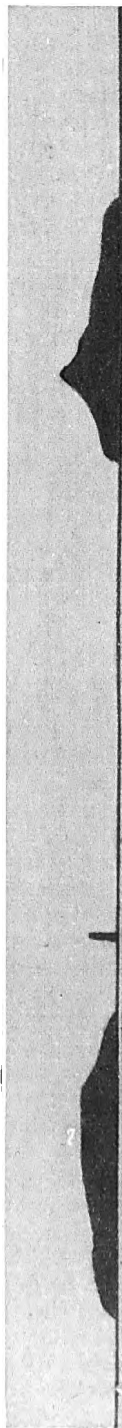


*Jabal Dubāb, bearing
140°, distant about 30 miles.*



*Jabal Dubāb, bearing
065°, distant 16 miles.*

Two views of Jabal Dubāb.
(Originals dated 1927.)



*Mokha South fort tower,
bearing 135°
distant 14 miles.*

Jabal Dubāb

Approach to Mokha.
(Original dated 1916.)

Chart 3180.

with the exception of Ile Grande which has a bright yellow colour ; Ile Grande, the highest of the group, has a masonry block on its summit.

The channels between these islets have never been closely examined and should be avoided.

A pinnacle rock, with a depth of 5 feet (1^m5) over it, lies about 3 cables north-westward of Ile Double, and close northward of this rock is a shoal, with a depth of 7 fathoms (12^m8) ; the water over this rock is not discoloured and, as the rock is dark in colour, it is not visible. Eddies have been observed about 2 cables westward of this rock, and as similar eddies have frequently been seen in this locality, in spots which were found clear of obstructions, these eddies may not necessarily indicate shoals. Local fishermen state that the depths hereabouts are irregular, and it is quite possible that other similar rocks may exist.

A bank, with a depth of 12 fathoms (21^m9), lies one mile northward of Ile Double, and another bank, with a least depth of 18 fathoms (32^m9) over it, lies about 2½ miles eastward of Ile du Sud.

Currents.—Generally, during north-westerly winds in June and July, 1917, the current from Ras Dumeira to Ras Si Ane set south-eastward and off the coast, at rates of from 10 to 30 miles a day.

The currents and eddies in the vicinity of Jezirat Seba are variable and, if passing between these islets, a vessel should steer direct for the passage from some distance off, as the eddies make steering difficult when turning round the islets.

Anchorage.—During southerly winds anchorage can be obtained northward of Ras Si Ane, in depths of from 8 to 10 fathoms (14^m6 to 18^m3), sand, but the coast cannot be closed sufficiently to afford good shelter, and the tidal streams are strong. There is landing in two small coves on the northern side of the promontory.

EASTERN SIDE.—Mokha to Ras Sheikh Sa'id.—Aspect.—From Mokha (*Lat.* 13° 19' N., *Long.* 43° 15' E.) the coast trends about 33 miles south-south-eastward and thence has a south-south-westerly direction for about 6½ miles to the entrance to Khôr Ghuraira, whence it trends 1½ miles south-westward to Ras Sheikh Sa'id. This coast is for the greater part bordered by a reef, which extends from 4 cables to 1½ miles offshore ; it is backed by a sandy plain, covered with scrub, rising gradually to the base of the mountains, about 15 miles inland, with hills and low hummocks rising in places from it.

Jabal 'Aqār (An Nar), situated about 13 miles eastward of Mokha, is table-topped ; Jabal Ath Thaubāni (Ath Thobani), lying about one mile south-south-westward of Jabal 'Aqār, is a long wedge-shaped hill, the northern edge of which forms a steep bluff. See view on chart 1955.

Jabal Dubāb (Dubaab), situated about 17 miles southward of Jabal Ath Thaubāni and about 5½ miles inland, has a sharp peak. Zi hill, lying close to the coast about 5½ miles south-westward of Jabal Dubāb, is a small conspicuous, wedge-shaped, rocky hill ; there is no other hill like it in the vicinity and it is more conspicuous from southward than from northward. There are several hills, from 90 to 700 feet high, between Zi hill and Jabal Dubāb. See views facing this page.

From about 12 miles north-eastward of Jabal Dubāb, Jabal 'Arar,

Charts 3661, 143, 6b, 8c.

Chart 3180.

a range of mountains, extends for about 26 miles in a south-easterly direction; its outline of needle-pointed peaks, *see* view on chart No. 3180, is generally irregular, but the peaks become more rounded 5 south-eastward, where, 10 miles inland, they terminate in Barn hill, which is conspicuous and square shaped, with a peak in the middle.

Jabal Hajar (Hejār) is a range of hills extending nearly parallel with the southern coast of Arabia from about 17 miles north-eastward of Ras Bāb-al-Mandab. It is dark, irregular in outline, and although 10 from 600 to over 1,000 feet (182^m9 to over 304^m8) high, appears low, as the sandy plain rises gradually from the coast to an elevation of about 400 or 500 feet (121^m9 or 152^m4) at its base.

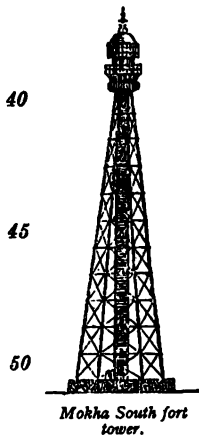
The mountains are visible, in clear weather, from seaward when approaching the Straits of Bāb-al-Mandab, from either side.

15 **Currents.**—Generally, during June and July, 1917, with north-westerly winds, the currents set south-eastward along the coast at rates of from 12 to 30 miles per day, but no set was experienced towards the land. A southerly current, with a rate of 1½ knots, was experienced between Perim island and Mushajjara islet, on 15th June, 1919, but none 20 was experienced by a vessel 12 hours previously. The currents are reported to be very variable, and on 13th July, 1919, no current was experienced between Mokha and Perim island.

In the deep water outside the shoals of Mokha road, the current sets northward during winter and spring.

25 **Sand storms.**—**Haze.**—In June, July, and August, 1917, a remarkable haze, due to sand blown from the land in the vicinity of Mokha (Lat. 13° 19' N., Long. 43° 15' E.) and Zi hill, was frequently experienced off this coast. Generally from about 1400 to 1600 sand haze was seen on the inland plain setting towards the coast, even when 30 the wind was north-westerly at sea. Haze then extended towards Perim island and Jezirat Seba, but it was usually clear at 2000. A severe sand storm was experienced on 27th July, about 2 miles offshore, just northward of Zi hill, when from 1700 to 1930 the visibility was only half a cable.

35 On 23rd August, between Zi hill and Perim island, a strong north-easterly breeze, with a severe sand storm, was experienced at 1430; there was a short but heavy rain squall at 1700, and at 2000 the weather was clear. **Chart 1955.**



Mokha road.—Mokha (Mocha) road, with depths of from 20 to 27 feet (6^m1 to 8^m2), lies from about 1½ to 1¾ miles westward of the town of Mokha, with greater depths further offshore, but, as there are several shoals in the approach, care is necessary when proceeding to the anchorage. *See* view on chart and facing page 139.

The town of Mokha stands on the eastern shore of a small bay, which is entered between two low points, on each of which stands the ruins of a fort; North fort is situated on the northern entrance point of this bay, about 6½ cables north-westward of the town, and South fort, on which is a framework tower, 171 feet (52^m1) in height (*see* sketch), stands on the southern entrance point, about 1½ miles southward of North fort.

Charts, 3180, 3661, 143, 6b, 8c.

Chart 1955.

Shoal water, with depths of less than 18 feet (5^m5), extends about 6 cables westward of South fort tower.

Dangers.—Clearing marks.—North shoals, with a least depth of 10 feet (3^m0) over them, lie about $1\frac{1}{4}$ miles west-north-westward of South fort tower; patches, with depths of from 15 to 18 feet (4^m6 to 5^m5), are situated from one to $3\frac{1}{4}$ cables north-westward of this 10-foot (3^m0) patch. 5

Charts 1955, 3180.

Mokha high minaret, situated about 8 cables east-south-eastward of North fort, in line with the northern edge of Jabal Ath Thaubāni, bearing 094° , leads northward of North shoals, and South fort tower in line with Jabal Dubāb, bearing 139° , leads north-eastward of them. 10

Chart 1955.

Shoals, with depths of from 10 to 12 feet (3^m0 to 3^m7) over them, lie about $1\frac{1}{4}$ miles westward of South fort tower, and a bank, with a depth of 23 feet (7^m0), is situated about three-quarters of a mile farther westward. 15

Four patches, having depths of from 28 to 30 feet (8^m5 to 9^m1) over them, are situated from about $3\frac{1}{4}$ to $3\frac{1}{2}$ miles westward of South fort tower. 20

South shoals, with a least depth of 13 feet (4^m0) over them, lie from about $2\frac{1}{4}$ miles west-south-westward to $2\frac{1}{2}$ miles south-westward of South fort tower (*Lat. $13^\circ 19' N.$, Long. $43^\circ 14' E.$*).

Between South shoals and the coastal bank is a channel, about 25 4 cables wide, with depths of over 30 feet (9^m1) in it.

Tides and tidal streams.—At springs there is often only one high and one low water every 24 hours; at neaps there are two tides every 24 hours, but their times are irregular.

The tidal streams set northward with a rising tide and southward with a falling tide, at rates of from one to 2 knots. The duration of the streams is much affected by winds. Close inshore, during strong southerly winds, the south-going stream often runs for 16 hours at a time and the north-going stream for 6 or 8 hours. 30

Landing place.—A line of piles, the remains of a ruined pier, projects from the shore about $5\frac{1}{2}$ cables south-eastward of North fort; landing can be effected on a sandy beach, either northward or southward of this line of piles, by a shallow draught boat. 35

Charts 1955, 3180.

Anchorage.—Directions.—A vessel approaching from northward should bring Mokha high minaret in line with the northern edge of Jabal Ath Thaubāni, bearing 094° , which, as already stated, leads northward of North shoals, and, when South fort tower is in line with Jabal Dubāb, bearing 139° , course may be altered south-eastward and a vessel can anchor in depths of from 20 to 22 feet (6^m1 to 6^m7) with the high minaret bearing about 092° . 40 45

Chart 1955.

Approaching from southward, a vessel of over 12 feet (3^m7) draught should keep westward of South shoals by keeping in depths of more than 11 fathoms (20^m1) until North fort bears 062° when it should be steered for on this bearing; when South fort tower bears 086° course should be altered northward until the high minaret is in line with the northern edge of Jabal Ath Thaubāni, bearing 094° , when a vessel should proceed as previously directed. 50

Charts 3180, 143, 8e, 2523.

Chart 1955.

As the tidal streams in the road attain rates of from one to 2 knots, vessels are recommended to moor.

- Mokha.**—Mokha (Mocha), formerly the greatest Yemen port, has
 5 deteriorated. The population did not exceed 1,000, in 1931. The houses are mostly in ruins, the only buildings of any importance, in 1940, being the mosques, some of which have high minarets; the highest, 118 feet (36^m0), situated in the eastern part of the town, being a good landmark. *See* view on chart.

- 10 **Communications.**—Mokha is connected by telegraph with Hudaida (Hodeida) and Sheikh Sa'id, whence a cable runs to Perim.

Coast.—**Dangers.**—Khōr Umm Ghail (Khor Umbaya), an inlet extending southward from Mokha, on the eastern side of Jezirat Ziadi, on which is South fort tower, dries in patches.

Chart 3180

- Dubāb village stands on a small rocky projection about one mile southward of Zi hill (*Lat.* 12° 57' N., *Long.* 43° 25' E.); a white sand-hill, 66 feet (20^m1) high, is situated on the inner part of the northern side of this projection. There are depths of 5 fathoms (9^m1) about
 20 3 cables offshore westward of the projection, which is fairly steep-to. Landing can be effected in boats through an opening in the reef from about 5 to 7 cables northward of Dubāb; there is also landing close southward of this village.

- From close southward of Dubāb, for a distance of about 9 miles, the
 25 coastal reef extends, in places, to as far as 1½ miles offshore, and dries in patches.

Chiltern shoal, lying about 3½ miles southward of Dubāb and 2½ miles offshore, has a least depth of 2½ fathoms (4^m6) over it.

Chart 2592.

- 30 Khōr Ghuraira (Sheikh Syed) is a lagoon extending about half way through the Bāb-al-Mandab peninsula. The entrance is almost closed by two banks, extending one from each side, which dry; there is a narrow channel, with depths of 3 feet (0^m9), between them, and the lagoon is shallower.

- 35 The tidal streams in the entrance to Khōr Ghuraira attain rates of from 3 to 4 knots.

Charts 2592, 3180.

- Ras Sheikh Sa'id to Jabal Hasīs.**—**Aspect.**—From Ras Sheikh Sa'id the coast trends for about 1½ miles south-south-eastward to Ras
 40 Bāb-al-Mandab; from Ras Bāb-al-Mandab the coast has an easterly direction for about 1½ miles to Warner point, thence trends about 2 miles east-north-eastward to a hilly promontory, named Jabal Hasīs, and is much indented. The coastal bank, with depths of less than 3 fathoms (5^m5) over it, from Khōr Ghuraira to Ras Bāb-al-Mandab,
 45 extends, in places, to as far as 4½ cables offshore; between Ras Bāb-al-Mandab and Jabal Hasīs there are depths of more than 5 fathoms (9^m1) at a short distance offshore.

- Jabal Manhali, or Quoin hill, situated about 1½ miles east-north-eastward of Ras Bāb-al-Mandab, is the highest land in this locality and
 50 is of volcanic formation. *See* views on charts 2592 and 8e. Jabal Haikah, lying about 2 miles north-eastward of Jabal Manhali, is a small range of hills of irregular outline; the intervening land is low, sandy and barren, but in the valley a few bushes and patches of grass may occasionally be seen.

Charts 3180, 3661, 143, 6b, 8e, 2523.

Chart 2592.

Coast.—Island and dangers.—Ras Sheikh Sa'id, which projects about one cable west-north-westward from the coast, is bordered by rocks, and the coastal bank, with depths of less than 3 fathoms (5^m5), extends about 1½ cables westward of it; there is a good landing place close southward of this promontory. A conspicuous white guard-house is situated about 5 cables east-south-eastward of Ras Sheikh Sa'id. 5

Several shoals, with depths of 5 fathoms (9^m1), lie from about one to 1½ miles westward of Ras Sheikh Sa'id. 10

Ras Bāb-al-Mandab is a prominent wedge-shaped headland, rising to an elevation of 551 feet (167^m9) about one mile north-eastward, with low land farther inland.

Sheikh Malu, or Oyster island (*Lat.* 12° 40' N., *Long.* 43° 28' E.), lies on the coastal bank, from about three-quarters of a cable to 3 cables west-south-westward of Ras Bāb-al-Mandab, and is connected with the cape by a rocky ledge; a shoal, with a depth of 3 fathoms (5^m5) over it, is situated about 3 cables west-north-westward of the western extremity of Sheikh Malu. 15

Charts 2592, 3180.

Between Ras Bāb-al-Mandab and Jabal Hasis several rocky points project from about 3 to 5 cables from the general coastline. 20

Turba, situated about 8 cables north-north-eastward of Warner point, is a square dark hill, on which stands the ruins of a fort.

Chart 2592.

Anchorage.—There is good anchorage for small craft either north-westward or south-eastward of Sheikh Malu, according to the prevailing wind. 25

Charts 2592, 3180.

The small bays between Ras Bāb-al-Mandab and Jabal Hasis afford shelter to small craft during northerly winds. 30

Chart 3180.

STRAITS OF BĀB-AL-MANDAB.—The Straits of Bāb-al-Mandab, lying between Ras Bāb-al-Mandab and Ras Si Ane, distant about 14½ miles south-westward, are divided by Perim island into two passages, called Large strait and Small strait; it is recommended that Large strait should be used for navigation in preference to Small strait, in which many casualties have occurred. 35

Currents and tidal streams.—From June to September, during the south-west monsoon, the water runs out of the Red Sea, and from November to April, during the north-east monsoon, it runs in. The surface set in the Straits of Bāb-al-Mandab is the resultant of the currents caused by wind and the tidal streams; it is very variable. The currents in the straits set approximately in the direction of the wind and attain a rate of 40 miles a day. From November to April, the period of strong south-easterly winds, the drift current often overcomes the south-east-going tidal stream, and there may be a north-westerly set with a rate of from a quarter of a knot to 3½ knots. In Large strait, and the Red sea northward to lat. 13° N., currents were observed setting north-westward and north-north-westward at rates of from 1½ to 3½ knots, in November and December, 1917, the winds being south-easterly and fairly strong. The north-westerly current close south-westward of Perim island turns sharply northward round Balfe point, 40 45 50

Charts 3180, 3661, 143, 6b, 8e.

Chart 3180.

its western extremity. In June and July, 1917, the currents off Perim island set generally south-south-eastward at rates of from 10 to 30 miles a day, the winds being north-westerly and light.

- 5 From observations made by H.M. surveying ship *Stork*, in January, 1898, whilst anchored in a depth of 118 fathoms (215^m8), 7 miles south-westward of Perim island, it appears that the surface current runs steadily into the Red sea at that season, with an average rate of 1½ knots, but its rate is greatly affected by the tidal streams. From
- 10 about 8 hours before to 4 hours after the highest high water at Perim (*Lat.* 12° 39' N., *Long.* 43° 26' E.) the rate of the current, setting north-westward, was from 1½ to 2½ knots, whilst from about 4 hours after to 8 hours before the highest high water the rate was from 0 to 1½ knots.
- 15 From observations made by H.M. surveying ship *Stork*, in four days of January, 1898, with a view to ascertaining the difference between the set of the lower and upper strata of the water in the entrance to the Straits of Bāb-al-Mandab, the following general results were obtained :
—There was a surface current setting into the Red sea at a rate of
- 20 about 1½ knots and, also, at a depth of 105 fathoms (192^m0), a current setting outwards at probably the same rate, both influenced by the tidal streams. The dividing plane between these currents was at a depth of about 75 fathoms (137^m2), but further observations would be required to determine this.
- 25 The greatest rate of the tidal streams was about 1½ knots and they set each way for about 12 hours ; this might be expected, as there is practically only one tide daily in this locality. The tidal streams, which extend to the bottom, are very irregular, both in rate and duration ; sometimes in the middle of the strait there is very little south-
- 30 east-going stream, whilst at springs and other times it attains a rate of 4 knots, causing ripples when against the wind. The streams in the strait are influenced by the prevailing winds ; after a strong north-westerly wind the south-east-going stream may continue for 16 hours, and after a strong south-easterly wind the north-west-going stream
- 35 may continue for the same time. During a continuance of strong south-easterly winds, if the force becomes light, the stream may set south-eastward instead of north-westward. The stream sets north-westward during the rising tide and south-eastward during the falling tide. The north-west-going stream is strong close southward of Perim
- 40 island. The north-west-going stream, approaching Small strait, divides at Azalea point, the south-eastern point of Perim island, one part flowing through the strait and the other along the south-western coast of the island ; the part which goes through the strait appears to divide near Ras Sheikh Barghūth, the northern extreme of Perim island,
- 45 one part setting north-north-westward, and the other round Balfe point, then turning south-eastward along the south-western coast of the island, and from about 3 to 2 hours before high water it meets the branch of the north-west-going stream, setting through Large strait, southward of Signal hill, near the south-western end of the island, and
- 50 causes overfalls which gradually work eastward to the entrance to False bay, the bay close eastward of the entrance to Perim harbour ; these streams are much influenced by the wind, and during the period when the current is setting into the Red sea the south-east-going stream does not appear to run.

Charts 3661, 143, 6b, 8e.

Chart 2592.

Perim island.—Perim island (*see* views on charts 2592 and 8e), situated in the Straits of Bāb-al-Mandab, is bare, rocky, and rather flat in appearance; its highest point, about a mile northward of its southern extremity, is 214 feet (65^m2) high. The lighthouse stands on the same ridge about 4 cables northward of this summit. 5

Signal hill (*Lat.* 12° 39' N., *Long.* 43° 24' E.), situated on the southern side of the island, 8 cables east-south-eastward of Balfe point, is 112 feet (34^m1) high; there is a flagstaff on the summit of this hill. A disused lighthouse stands on Obstruction point, the north-eastern extremity 10 of the island.

The surface of this island is intersected with watercourses and is covered with coarse grass and stunted shrubs, the subsoil being sand and conglomerate coral.

Chart 923, plan of Perim harbour.

15

On the southern side of the island is Perim harbour and False bay; False bay, the head of which is encumbered with patches of sand and coral, has depths of less than 3 fathoms (5^m5) just within its entrance points.

Chart 2592.

20

Perim island, which is a British possession, forms part of the colony of Aden; it is administered, under the Governor, by an officer of the Aden police.

Chart 923, plan of Perim harbour.

Lights.—A light is exhibited, at an elevation of 266 feet (81^m1), from a grey stone tower with embattled walls and a white lantern, 81 feet (23^m7) in height, situated in the eastern part of Perim island. 25

Chart 2592.

A light, for the use of aircraft, is exhibited from a beacon, situated in the northern part of Perim island, 7½ cables north-westward of Perim High light. 30

A light is exhibited, at an elevation of 44 feet (13^m4), from an iron framework tower, 26 feet (7^m9) in height, situated on Balfe point.

Coast.—Dangers.—The northern coast of Perim island is mostly bordered by boulders and patches of coral; the coastal bank, with depths of less than 3 fathoms (5^m5) over it, extends about 5 cables northward of Ras Sheikh Barghūth (Sheikh Berkhūd), and the outer edge of this bank, from its northern extremity, trends south-westward to close off a point about one mile west-south-westward of the cape and south-eastward to close off Obstruction point. 40

A coral patch, with a least depth of 2 feet (0^m6) over it, is situated on the coastal bank, about 6 cables westward of Ras Sheikh Barghūth; other rocky shoals, with depths of less than 6 feet (1^m8), and the positions of which can best be seen on the chart, lie on this coastal bank, to the east of Ras Sheikh Barghūth. 45

A shoal, with a depth of 3 fathoms (5^m5), is situated about 7 cables north-north-eastward of Ras Sheikh Barghūth.

A rock, with a depth of less than 6 feet (1^m8) over it, lies 1½ cables offshore about 1½ cables southward of Obstruction point; a spit, with a least depth of 2½ fathoms (3^m7), extends about threequarters of a cable eastward of Azalea point; Azalea rock, situated about 1½ cables eastward of Azalea point, has a depth of 2 fathoms (3^m7) over it. 50

The south-western coast of the island is fringed in places by a coral reef; with the exception of a reef extending about one cable west-

Charts 2592, 3180, 3661, 143.

Chart 2592.

south-westward of a point 5 cables south-eastward of Balfe point; no other dangers outlie the points of this coast by more than about half a cable.

5 *Chart 923, plan of Perim harbour.*

Perim harbour.—Buoy.—Perim harbour (*Lat. 12° 39' N., Long. 43° 26' E.*), the entrance to which lies between Pirie point and Lee point, about 5 cables east-south-eastward, is divided by Murray point, a promontory situated about 5 cables northward of Pirie point, into
10 two branches; the north-western branch forms the port, the north-eastern branch being encumbered with shoals.

Shand, James, and Fisherman's (William) bays, named in order from southward, are situated on the eastern side of the harbour; the heads of these bays partly dry out to a distance of about $1\frac{1}{2}$ cables, and
15 the outer parts of the bays are shallow.

The coastal bank, with depths of less than 5 fathoms (9^m1) over it, extends to a distance of about one cable southward, $1\frac{1}{2}$ cables east-south-eastward, and three-quarters of a cable eastward of Pirie point.

20 Between Lee point and Liverpool point, the southern entrance point of Shand bay, the coastal bank, with depths of less than 5 fathoms (9^m1), extends to a distance of about one cable offshore and continues to a distance of about 2 cables northward of Liverpool point; a white spherical buoy is moored about one cable north-north-westward of Lee
25 point.

Winds and weather.—Throughout the summer north-westerly winds prevail, which bring fine dust. This forms a cloud bank which obscures the sun about an hour before sunset. In September the weather is particularly unpleasant and damp, especially at night, when
30 clouds usually form overhead and render the atmosphere oppressive.

Considerable, and often sudden, changes of sea surface temperature occur in the neighbourhood of Perim island, *see* page 36; owing to these conditions the temperature of the water inside the harbour may be as much as 20° lower than that of the sea northward of the island.

35 For Meteorological tables, *see* page 52.

Landmarks.—Beacons.—There are two cairns on the promontory of which Lee point is the western extremity; the front is situated about half a cable north-eastward of Lee point, and the rear cairn, at an elevation of 120 feet (36^m6), 270 yards (246^m9) east-north-eastward of the
40 front cairn. These cairns, when in line, bear 060°.

A white hexagonal wooden beacon stands on Pirie point; the Government Agent's house, on the roof of which there is a flagstaff, stands about $1\frac{1}{2}$ cables north-westward of this point.

A grey framework mast, 60 feet (18^m3) in height, is situated at the
45 root of the Oil jetty, about three-quarters of a cable west-north-westward of the Government Agent's house; a conspicuous tall steel derrick is situated on the head of the Water pier, about 3 cables north-westward of this mast.

There are two conspicuous chimneys on the condensers, near the root
50 of the Water pier, and two on the smithy, about half a cable westward of the condenser chimneys.

The hospital, which is a conspicuous building, stands on a hill, 48 feet (14^m6) high, about $1\frac{1}{2}$ cables north-westward of the smithy.

The barracks, about $2\frac{1}{2}$ cables north-north-westward of the southern

Charts 2592, 3180, 3661, 143.

Chart 923, plan of Perim harbour.

extremity of Murray point (*Lat. 12° 39' N., Long. 43° 25' E.*), is another good landmark; two beacons about half a cable apart are situated on this point.

Pilotage.—By hoisting the pilot flag by day, or burning a *blue* light at night, when at a moderate distance from Perim high lighthouse, a pilot will be found well outside the harbour; corresponding signals, in answer, are made from the shore.

Dangers.—**Buoys.**—Myrmidon shoal, on the southern side of the harbour, about $1\frac{1}{2}$ cables northward of Pirie point and three-quarters of a cable offshore, has a least depth of 4 fathoms (7^m3) over it.

Nimble shoal, with a least depth of $2\frac{1}{2}$ fathoms (4^m6), lies with its eastern extremity about three-quarters of a cable west-north-westward of Chevalier point, the northern entrance point of Shand bay, and extends for about $1\frac{1}{2}$ cables in a west-north-westerly direction.

Princes shoal, situated about $1\frac{1}{4}$ cables south-eastward of Murray point, has a least depth of 2 fathoms (3^m7); a shoal, with a depth of 5 fathoms (9^m1), lies about $1\frac{1}{4}$ cables south-south-westward of the south-western extreme of Murray point, and a shoal, with a depth of $2\frac{3}{4}$ fathoms (5^m0), is situated about one cable west-south-westward of the same point. About $2\frac{1}{2}$ cables farther westward are some 3-fathom (5^m5) patches, the positions of which can best be seen on the chart.

The existence and position of buoys are not to be relied upon.

Tidal streams.—The stream during the rising tide sets northward into the harbour, and the main part of it turns north-westward into the north-western branch; a small part sets into James bay, then turns westward close round Murray point, and into Murray bay, the bight at the western end of the harbour, whence it turns south-eastward along the northern side of Pirie point peninsula, until in the vicinity of Myrmidon shoal, where it is no longer perceptible; eastward of the Water pier it is not perceptible outside a depth of 3 fathoms (5^m5).

The stream during the falling tide appears to set fairly regularly out of the harbour, though close off Murray point its direction is uncertain.

Piers.—The Oil jetty and Water pier were mentioned on page 146. The Water pier, on which is a steam derrick capable of lifting 15 tons, has depths of 12 feet (3^m7) alongside its head.

There are three small piers about one cable south-eastward of the Water pier, and between these three piers and the Water pier is the Office pier, with a depth of 6 feet (1^m8) alongside it.

The Residency pier, on the western side of Murray point, has a depth of 4 feet (1^m2) alongside.

Anchorage.—There is anchorage in a depth of $5\frac{1}{2}$ fathoms (9^m6), sand and coral, about 2 cables east-north-eastward of the western of the three piers mentioned above, with about 140 yards (128^m0) swinging room in a least depth of $4\frac{1}{2}$ fathoms (7^m8); also farther north-westward in a less depth.

The quarantine anchorage is south-westward of Chevalier point, and eastward of a line drawn from the south-western extremity of Murray point (*Lat. 12° 39' N., Long. 43° 25' E.*) to Lee point, in depths of about 6 fathoms (11^m0). A heavy swell sets in during south-south-easterly winds.

Charts 2592, 3180, 3661.

Chart 923, plan of Perim harbour.

In 1930, the depths in the main and quarantine anchorages were reported to have increased by about 10 feet (3^m0).

There are several mooring buoys.

- 5 **Directions.**—Caution is necessary when entering Perim harbour, as the current occasionally sets across the entrance according to the direction of the wind. A vessel should approach with the beacons on Murray point in line, bearing 344°, which leads between the white buoys off Pirie and Lee points, passing about 50 yards (45^m7) eastward of the edge of the coastal bank east-south-eastward of Pirie point ;
10 when the flagstaff on Signal hill bears 285° a vessel should steer for it on that bearing and anchor as convenient or proceed to one of the mooring buoys as the Harbour Master may direct.

- A vessel can give the coastal bank extending east-south-eastward
15 from Pirie point a wider berth by bringing either of the beacons on Murray point in line with the cairn a quarter of a cable eastward of the barracks, bearing about 340°.

- With strong southerly and south-easterly winds there is often a considerable swirl off Liverpool point, tending strongly to turn a vessel to
20 starboard when entering, therefore an unhandy vessel should enter at a fair speed. If this tendency cannot be checked with the helm it is probably well to increase to full speed, and avoid going astern, which would increase the tendency to turn, till as late as possible, as with increased speed the turning will either be checked or the vessel will
25 ground, in smooth water, on the coastal bank northward of Liverpool point. The swirl is most marked with a rising tide, but also occurs in strong winds, with a falling tide.

Population.—The population of Perim, in 1936, was 1,200.

Communications.—There is steamer communication with Aden.

- 30 **Port facilities.**—There is a tank vessel capable of delivering up to 80 tons of water an hour. The Water pier has a pipe line each side. There is an ice-making plant.

Fresh meat and vegetables can be obtained. Up to 600 lbs. of bread can be obtained at 24 hours' notice.

- 35 There is a resident Medical Officer who inspects all vessels on arrival. There is a hospital for the treatment of Europeans and natives.

Time.—Standard time is 3 hours fast on Greenwich mean time.

Charts 2592, 3180.

- Large strait.**—Large strait, between the African coast and the
40 south-western coast of Perim island, is deep and is free from dangers in the fairway ; it should be used by all vessels entering or leaving the Red sea.

Chart 2592.

- Two small rocky patches, with least depths of 10 and 9 fathoms
45 (18^m3 and 16^m5) over them, are situated about 5½ cables south-westward and south-south-westward, respectively, of Pirie point.

- Approaching the strait from the eastward, Jabal Manhali is visible from a distance of about 34 miles, and other peaks about Ras Bāb-al-Mandab from a less distance. Perim island, with its high lighthouse
50 (*Lat. 12° 39' N., Long. 43° 26' E.*), is visible from a distance of from 15 to 20 miles ; its outline is even and unbroken and it should not, therefore, be mistaken for the high land of Ras Bāb-al-Mandab, which has many irregularities.

See views on charts Nos. 8e and 2592.

Charts 2592, 3180, 3661, 143, 6b, 8e.

Chart 3180.

Currents and tidal streams.—*See* page 143.

Charts 2592, 3180, 143.

Directions.—A vessel bound for Large strait from northward should, from westward of Quoin island (page 125), steer 159° , as indicated by a pecked line on chart 143, passing about 2 miles westward of Balfe point, and then steer to pass from about one to 2 miles from the south-western side of Perim island; by taking due precautions when approaching this island, and making allowance for the strong currents, no difficulties should be experienced. In July and August, 1917, sand storms were experienced off Perim. 5 10

Chart 2592.

Small strait.—Small strait, between the south-western coast of Arabia and the north-eastern coast of Perim island, has moderate depths and is free from dangers in the fairway. 15

The dangers off this part of the Arabian coast are described on page 143 and those off the northern and eastern coasts of Perim island on page 145.

Currents and tidal streams.—The tidal streams in Small strait are very strong and irregular. *See* also page 143. 20

Directions.—A vessel coming from northward and intending to proceed through Small strait can pass westward of the shoals westward of Ras Sheikh Sa'id by approaching with Perim high lighthouse bearing about 164° and, when about 2 miles from the lighthouse, a south-easterly course leads through the fairway of Small strait; care must be taken, on account of the strong currents and tidal streams, to avoid the 3-fathom (5^m5) shoal and coastal bank northward of Perim island. Sheikh Malu is not conspicuous, except when clear of the higher land in the background. 25

In June, July and August thick hazy weather is often experienced on the Arabian coast between Aden and the straits. 30

Chart 3180.

NORTHERN SIDE OF GULF OF ADEN.—Jabal Hasis to Ras Kaau.—**Aspect.**—Between Jabal Hasis and Ras al 'Āra, about 23 miles eastward, the coast, which is low and sandy, recedes, forming Ghubbat al Haika, which affords convenient and smooth anchorage for small vessels with local knowledge. 35

The aspect of this locality is described on pages 139-140 and page 142.

From Ras al 'Āra the coast trends in an easterly direction for about 14 miles to Khōr 'Umaira and thence a further $15\frac{1}{2}$ miles eastward to Ras Kaau; the coast is low and sandy, with a few bushy scrubs, and there are some rocky points and cliffs of hard sand, from 20 to 30 feet (6^m1 to 9^m1) high, in places. 40

Jabal Kharāz (*Lat.* $12^{\circ} 44' N.$, *Long.* $44^{\circ} 09' E.$), the summit of which is situated about $4\frac{3}{4}$ miles northward of Khōr 'Umaira, is a mountainous ridge extending to within about one mile of the coast; the mountain is of limestone and granite formation. On the western side of the summit is a ruin of roughly hewn stone. *See* view facing page 150. 45

Charts 3180, 6b.

From Notch, a mountain situated about 25 miles northward of Jabal Kharāz, a range, known as Jabal Yāfa'i, extends about 65 miles eastward, at a distance of from 20 to 25 miles inland, attaining elevations of from about 3,000 to 6,500 feet (914^m4 to 1,981^m2). 50

Charts 3180, 3661, 143, 6b, 8e, 2523, 1012.

Chart 3180.

Jabal Umm Birka (am Birka) and Jabal Sannūma (Sunamma), situated about 3 miles north-westward and 5 miles west-north-westward, respectively, of Ras Kaau, and lying from about $1\frac{1}{2}$ to $2\frac{1}{2}$ miles inland, are two conspicuous sandhills with dark summits; Jabal Umm Birka is a double-peaked saddle hill, and there are smaller hills between it and the coast. See view facing this page.

Charts 3661, 6b.

Jabal Jabalain, situated about 17 miles northward of Jabal am Birka, is the south-western summit of the Jabal Yāfa'irange, mentioned above.

Chart 3180.

Off-lying bank.—Rambler knoll, lying about 16 miles west-south-westward of Ras Kaau and $4\frac{1}{2}$ miles offshore, has a depth of 10 fathoms (18^m3) over it.

Coast.—Dangers.—In order to avoid the coastal bank between Jabal Hasī and Ras al 'Āra, and some shoals, with depths of $2\frac{1}{2}$ fathoms (4^m6) over them, which lie, in places, about one mile offshore, in this neighbourhood, a vessel should not approach the coast within a depth of 10 fathoms (18^m3) by day and of 14 fathoms (25^m6) at night.

Ras al 'Āra is low, sandy, rounded, and difficult to identify.

Between Ras al 'Āra and Khōr 'Umaira, a bank of hard sand, with depths of from $2\frac{1}{2}$ to 5 fathoms (4^m1 to 9^m1) over its outer edge, which is steep-to, extends to as much as 3 miles offshore; the sea breaks in places over this bank in heavy weather. The southern point of Arabia lies about 2 miles eastward of Ras al 'Āra; it is a small projection, with a rock, awash, close off it.

A rock, with a depth of less than 6 feet (1^m8) over it, lies $1\frac{1}{2}$ miles southward of the southern point of Arabia; it is steep-to.

Several vessels have been wrecked in this locality, but a safe offing in thick weather can be assured by sounding; it is inadvisable to approach within a depth of 16 fathoms (29^m3) by day in hazy weather or of 20 fathoms (36^m6) at night. The water hereabouts is often discoloured.

Khōr 'Umaira is almost landlocked through a long narrow sandy spit extending from its south-eastern end in a west-north-westerly direction towards the coast, leaving a narrow entrance with a least depth of 3 feet (0^m9) at its western end; there are several reefs, which dry, within this inlet, but in its south-eastern part there is a basin with a least depth of $3\frac{1}{2}$ fathoms (5^m9).

This sandspit (*Lat.* 12° 37' N., *Long.* 44° 10' E.) is nearly covered at high water, and a bank on which there are several rocks, with depths of less than 6 feet (1^m8) over them, extends about three-quarters of a mile southward of it.

Foul ground, with rocky heads, over which the sea usually breaks, extends about 2 miles westward of the entrance. Except at high water, any small craft or boat intending to enter this inlet should approach the coast not less than $2\frac{1}{2}$ miles westward of its entrance and keep close along the beach within the foul ground.

Between Khōr 'Umaira and Ras Kaau the coastal bank, with depths of less than 5 fathoms (9^m1), extends, in places, to as much as $2\frac{1}{2}$ miles offshore, and there are depths of 10 fathoms (18^m3) as much as $3\frac{1}{2}$ miles offshore. The depths off this part of the coast are irregular and pass-

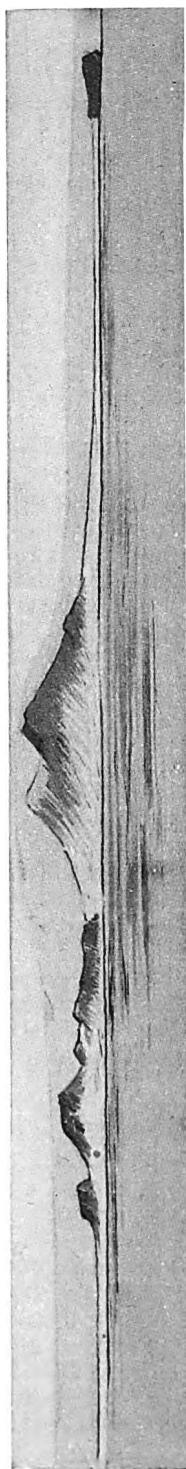
Charts 3661, 6b, 8e, 2523, 1012.

To face page 150.



*Jabal Kharāz, bearing 070°,
distant 35 miles.*

Jabal Kharāz from south-westward.



Jabal Sannāma.

*Jabal Umm Birka,
bearing 340°,
distant 8 miles.*

Ras Kaau.

Northern side of Gulf of Aden westward of Ras Kaau.

(Originals dated 1927.)

Chart 3180.

ing vessels should keep at least 5 miles offshore in depths of not less than 20 fathoms (36^m6).

Parseval rock, lying about $4\frac{1}{2}$ miles south-westward of Ras Kaau and about $2\frac{1}{2}$ miles offshore, has a least depth of $1\frac{1}{2}$ fathoms (2^m7) ; about 2 cables east-south-eastward of this rock is a depth of $4\frac{1}{2}$ fathoms (8^m2).

For a distance of about $3\frac{1}{2}$ miles south-westward and westward of Ras Kaau there is a chain of rocks, with depths of less than 6 feet (1^m8), over which the sea nearly always breaks.

Ras Kaau, which shows as a black well-defined bluff, is a small projection. See views facing pages 150 and 152.

Anchorage.—There is good anchorage, in depths of about 6 fathoms (11^m0), mud and sand, in the small eastern bight of Ghubbat al Haika, sheltered from north-easterly winds ; the coast here is rather steep. Barn hill, bearing between 003° and 007°, leads to this anchorage. *Chart 3661.*

Ras Kaau to Ras Fuqum.—Aspect.—Islets and dangers.—Between Ras Kaau and Ras 'Imrān, a rocky promontory about 18 miles east-north-eastward, the coast, which is low, sandy, and backed for 10 miles inland by a sandy plain covered with bushes, forms Bandar 'Imrān which, with the exception of a shoal, with a depth of 14 feet (4^m3) over it, lying about 5 miles north-westward of Ras 'Imrān and one mile offshore, is free from dangers.

There is good shelter from easterly winds, north-westward of Ras 'Imrān, in depths of from 3 to 5 fathoms (5^m5 to 9^m1), sand and shells, from about half a mile to 2 miles offshore.

Jabal Aziz, a small rocky island, lies close south-westward of Ras 'Imrān, from which it is separated by a narrow channel encumbered with rocks ; three rocks of considerable elevation, and with depths of 10 fathoms (18^m3) close outside them, lie within 3 cables of its western side.

Between Ras 'Imrān and Ras Fuqum (Fukom), the western extremity of Little Aden peninsula, about $5\frac{1}{2}$ miles eastward, is Bandar Fuqum (Fukom) ; the shores of this bay are low and swampy, and the tomb of Sheikh Sammara, with a few huts near it, stands on the western side of the bay.

Jazirat Abu Shamma, lying about a quarter of a mile offshore and $1\frac{1}{2}$ miles north-eastward of the southern extreme of Ras 'Imrān (*Lat.* 12° 44' N., *Long.* 44° 44' E.), is a small dark-coloured islet close off the tomb of Sheikh Sammara ; there are two boat anchorages westward of this islet.

See views facing pages 152 and 153.

Jazirat al Juhub, situated about $2\frac{1}{2}$ miles eastward of Ras 'Imrān, is a round islet, with a rock, which dries 2 feet (0^m6), lying about 3 cables east-south-eastward of it.

Charts 7, 3661.

ADEN.—The British colony of Aden includes Perim island, previously described ; Little Aden peninsula ; Aden peninsula and isthmus ; Sheikh Othmān town, about 5 miles northward of the northern end of Aden peninsula, with the district round it, comprising Bīr Ahmad village, situated about $4\frac{1}{2}$ miles westward of Sheikh Othmān, and 'Imad village, lying about $3\frac{1}{2}$ miles north-eastward of the same town. The colony has an area of about 80 square miles and is administered by

Charts 3661, 6b, 8e, 2523.

Charts 7, 3661.

a Governor, who is also the General Officer Commanding the troops. The population, in 1942, was about 33,000.

Charts 6b, 1012.

- 5 The Aden protectorate, westward of about the meridian of $46^{\circ} 00' E.$, is bounded on the north by the Kingdom of the Yemen; the southern boundary starts from a point opposite Perim island.

The protectorate extends eastward to include the Hadhramaut and the territories of the Sultan of Qishn, who is also Sultan of Socotra.

10 *Chart 7.*

The port of Aden (*Lat. $12^{\circ} 47' N.$, Long. $44^{\circ} 59' E.$*) is a fuelling station and port of call for vessels passing to and from the Suez canal; the port is under the control of a Port Officer, from whom a copy of the port regulations can be obtained.

- 15 **Climate.—Winds and weather.**—The climate of Aden, during the north-east monsoon, is cool and pleasant, especially from November to January, but is very hot, damp, and oppressive during the south-west monsoon. During the south-west monsoon hot sandy winds prevail on the peninsula, but on its western side the breezes are from seaward and fairly cool. Heat apoplexy is common during the hot season amongst sailors, especially the firemen; the settlement is exceptionally free from infectious diseases and epidemics.

- 20 Sand storms occur in the months of May, July, and August. These come from a northerly or north-north-westerly direction, at sunset, and blow very hard at times until about 2200; the air is then so thick with sand that it is impossible to see more than a very short distance.

- Little warning is given of the approach of these squalls, except for a dense cloud of sand banking up from northward and north-westward an hour or two before sunset. About 2 hours after the beginning of the storm there is a calm, and after a short interval the wind comes from southward, with great force for another 2 hours or so, when the sand clears and the wind lessens.

- 35 During the month of August, dense mists occur at times and the high land is only visible for a distance of about a mile.

A dry northerly wind occasionally blows in the Gulf of Aden during the south-west monsoon without any warning, either by the appearance of the weather, or the behaviour of the barometer; it only blows violently about three or four times a year.

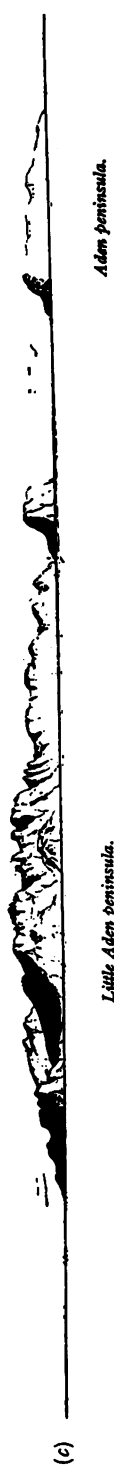
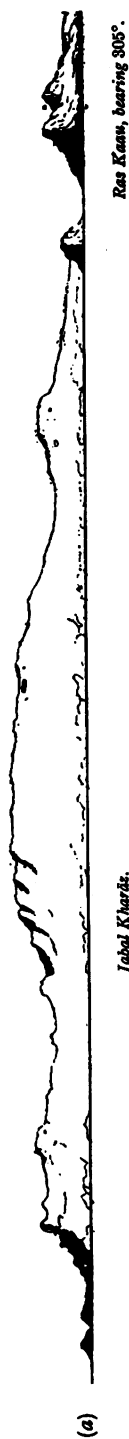
- 40 Usually the monsoon fails and the wind comes suddenly with great violence from north-westward and north-eastward, raising clouds of sand, with much lightning but no thunder, the barometer rising quickly about 4 millibars.

- It usually continues from 3 to 4 hours, and occasionally comes on again from eastward, the barometer rising and falling with the wind.

Towards the end of the south-west monsoon northerly squalls occur near Aden (*Lat. $12^{\circ} 47' N.$, Long. $44^{\circ} 59' E.$*); they carry no sand, are less violent, and the barometer does not rise; the clouds are dark coloured.

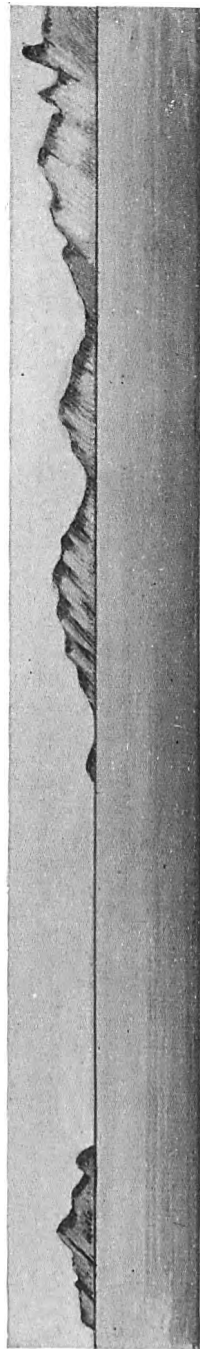
- 50 During the north-east monsoon there is a weak sea breeze, lasting from about noon until 1700, when a land breeze sets in, sometimes suddenly with gusts of from force 4 to 6 on the Beaufort scale, and continues until midnight. During the south-west monsoon the sea breeze is from southward or south-eastward, and the land breeze

Charts 3661, 6b, 8e, 2523, 748b.



Three views of northern side of Gulf of Aden, westward of Aden.

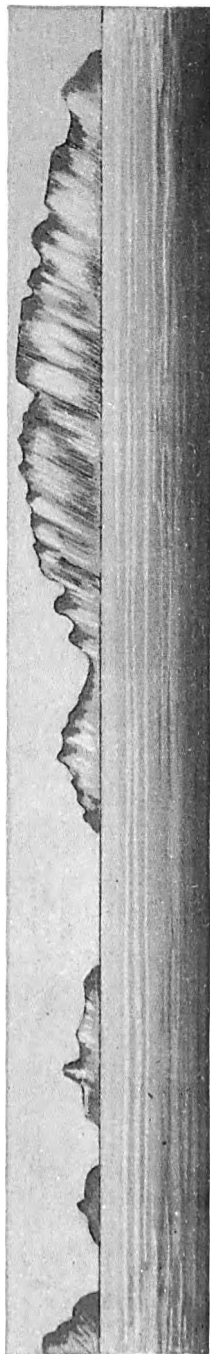
(Originals dated prior to 1921.)



Ras 'Imrân.

Little Aden peninsula.

*Jabal am
Musalkam.*



Jabal Ihsân.

Ras Tarshain.

Aden peninsula.

Ras Marshaq.

View, in two parts, of approach to Aden from southward.

(Original dated 1927)

Chart 7.

may set in suddenly at about 1700 as during the north-east monsoon.

Considerable and often sudden changes of sea surface temperature occur in the neighbourhood, particularly westward of Aden. *See* 5 page 36.

For Meteorological tables, *see* page 53.

Chart 3661.

Light.—A light, for the use of aircraft, is exhibited from a beacon situated about 2 miles westward of Sheikh Othmān. 10

Charts 7, 3661.

Little Aden peninsula.—Aspect.—Little Aden peninsula, extending about $5\frac{1}{2}$ miles eastward from Ras Fuqum, is a mountainous mass of granite; Jabal am Muzalkam (Sugarloaf), a mountain about $2\frac{3}{4}$ miles eastward of Ras Fuqum, is the highest peak of this 15 peninsula and is conspicuous. Little Aden peninsula and Aden peninsula, about 4 miles further eastward, are somewhat similar in appearance and, from a distance, seem to be two islands. A deep ravine winds from Bandar Fuqum through the centre of Little Aden peninsula for about $3\frac{1}{2}$ miles; with the exception of its eastern extreme, the 20 eastern part of this peninsula is low-lying. Jabal Ihsān (Ass's Ears), situated about $2\frac{1}{2}$ miles eastward of Jabal am Muzalkam, is a conspicuous double peak of granite.

See view on chart 7 and views facing this page and page 152.

Coast.—Islets and dangers.—Ras Alarga lies about $1\frac{1}{2}$ miles 25 south-eastward of Ras Fuqum; between Ras Alarga and Ras Mujallab Haidi (Mujallab Heidi), about $1\frac{1}{2}$ miles eastward, is a bight, the northern shore of which is indented.

Chart 7.

Between Ras Mujallab Haidi and an islet, 320 feet (97^m5) high, about 30 $5\frac{1}{2}$ cables east-north-eastward, is Bandarash Sheikh (Bandar Sheikh); this islet is connected with the mainland northward by a reef and bank; depths of less than 3 fathoms (5^m5) extend to a distance of about 3 cables from the head of Bandarash Sheikh.

Between the eastern side of this 320-foot (97^m5) high islet and the 35 western side of a promontory, about $3\frac{1}{2}$ cables eastward, the southern extremity of which is called Ras Abu Qiyama (Abu Kiyama), is a shallow bight; the white temple at the tomb of Sheikh Ghadir is situated about $5\frac{1}{2}$ cables north-north-westward of Ras Abu Qiyama.

Between Ras Abu Qiyama (*Lat.* $12^\circ 44' N.$, *Long.* $44^\circ 54' E.$) and 40 a promontory about one mile north-eastward is the entrance to Khōr Ghadir; an islet, which is connected with this promontory by a shallow spit, lies about $2\frac{1}{2}$ cables south-westward of it.

About midway between the promontory just mentioned and Ras Salil, about $6\frac{1}{2}$ cables east-north-eastward, is a small projection; the 45 bights on either side of this projection are shallow.

Jazirat Salil, situated about $5\frac{1}{2}$ cables southward of Ras Salil and 3 cables offshore, is conspicuous; a rock, one foot (0^m3) high, lies about one cable eastward of the southern end of this islet and at the south-eastern end of a shallow bank which extends from the islet and 50 which has on it another above-water rock and two rocks awash; shoal water, with depths of less than 3 fathoms (5^m5), extends about half a cable from the north-western side of Jazirat Salil.

From Ras Salil the eastern coast of the peninsula trends about one

Charts 3661, 6b, 8e, 2523.

Chart 7.

mile north-north-westward and thence about the same distance west-north-westward to the entrance to Khôr Bir Ahmad.

Square islet, situated about 5 cables northward of Ras Salil and about 5 3 cables offshore, is connected with the coast westward by a bank, which nearly dries; Low islet, about $2\frac{1}{2}$ cables northward of Square islet and $2\frac{3}{4}$ cables offshore, lies at the edge of the coastal bank, and a shallow spit extends one cable north-eastward of it.

Pinnacle rock, situated near the northern end of a shallow bank and 10 about 4 cables north-eastward of the northern point of Square islet, is conspicuous. Peaked rock lies at the southern end of this bank and about $1\frac{1}{2}$ cables southward of Pinnacle rock; between these two rocks is a rock awash and Small rock, the latter lying at the eastern edge of the bank.

15 *Charts 7, 3661.*

Khôr Bir Ahmad derives its name from the village of Bir Ahmad; Sailân (Seilan) village is situated about $2\frac{1}{2}$ miles north-north-eastward of Bir Ahmad. The channel leading to the inner part of Khôr Bir Ahmad is narrow and shallow, with sandbanks, which dry, extending 20 from both sides; the inner part of the inlet has not been examined, but its shores are low and sandy and are covered with small scrub.

Chart 7.

Anchorage.—Bandarash Sheikh affords anchorage in depths of 25 from 18 to 35 feet (5^m5 to 10^m7) during offshore winds.

Khôr Ghadir affords anchorage in depths of from 3 to 9 fathoms (5^m5 to 16^m5), sand.

Aden peninsula.—Aspect.—Aden peninsula is high, rocky, and of volcanic formation; near its centre are several precipitous peaks, the 30 highest being 1,811 feet (552^m0) in height. One of these peaks, called Shamshan, on which there is a disused signal station and flagstaff, situated about 9 cables from the northern coast of the peninsula, is conspicuous. The harbour lies westward and north-westward of the peninsula.

35 The peninsula is connected with the mainland by a low isthmus extending northward from its north-eastern end; Khôr Maksar lies on the western side of the isthmus. There are several radio masts, from 135 to 500 feet (41^m1 to 152^m4) in height, situated on the isthmus, about $3\frac{1}{2}$ miles north-north-eastward of Shamshan (*Lat.* $12^\circ 47' N.$, 40 *Long.* $45^\circ 01' E.$).

As previously stated, Aden and Little Aden peninsulas, which are somewhat similar in appearance, from a distance appear as two islands. See views on chart No. 7, and views facing pages 152 and 153.

Lights.—When night flying is taking place *red* lights are exhibited 45 from the heads of the radio masts described above and from other points of vantage in the vicinity.

Charts 7, 3661.

Current.—During the north-east monsoon, the current appears to set west-north-westward, at a rate of about 2 knots, between Aden 50 peninsula and the 100-fathom (182^m0) line, which lies about 9 miles southward of it.

On the eastern side of the peninsula allowance must be made for the current which sets northward during both monsoons.

See also page 16.

Charts 3661, 6b, 8e, 2523.

Chart 7.

Spoil ground.—Buoy.—A conical buoy, painted with black and white vertical stripes, moored about 3 miles southward of Shamshan and $1\frac{3}{4}$ miles offshore, marks the northern end of a spoil ground.

Coast.—Islands and dangers.—Beacon.—Lights.—From Ras Kutam, the north-eastern point of Aden peninsula, the coast, off which lies the island of Sirah, has a general south-easterly direction for about $1\frac{1}{4}$ miles to Ras Marshaq, and forms two bays, the southern of which is called Bandar Hokat; the northern bay, which fronts the town of Aden, is filled with a sandbank, which dries, and Bandar Hokat is sandy and shallow.

Sirah, an island having on its summit a conspicuous round tower, lies with its south-western point about $1\frac{3}{4}$ cables offshore and is connected with the mainland by a causeway.

Ras Marshaq is a narrow promontory, on which stands a signal station.

A light is exhibited, at an elevation of 244 feet (74^m4), from a dark grey tower, 85 feet (25^m9) in height, situated on the south-eastern part of Ras Marshaq.

Between Ras Marshaq and Ras Taih, the southern extremity of which is situated about one mile west-south-westward, is Bandar Daras; depths of less than 3 fathoms (5^m5) extend to a distance of about $2\frac{1}{2}$ cables from the head of this bay.

From Ras Taih the southern coast of Aden peninsula trends $5\frac{1}{2}$ cables west-south-westward to Ras Antuk (Sinaila) and is steep-to; thence it has a west-north-westerly direction for about $1\frac{3}{4}$ miles to a 449-foot (136^m9) high promontory.

Round island, or Jazirat Denafa, 110 feet (33^m5) high, is situated about $4\frac{1}{2}$ cables east-south-eastward of the southern extreme of the 449-foot (136^m9) high promontory and about $1\frac{3}{4}$ cables offshore; it is connected with the peninsula north-eastward by a reef and a shallow bank. The light on Elephant's Back, about $1\frac{1}{2}$ miles west-north-westward, is obscured over Round island.

Between the 449-foot (136^m9) high promontory and Elephant's Back (Lat. $12^{\circ} 46' N.$, Long. $44^{\circ} 59' E.$), about $8\frac{1}{2}$ cables west-north-westward, is Conquest bay; depths of less than 3 fathoms (5^m5) extend to a distance of about 2 cables from the head of this bay and to about $1\frac{1}{2}$ cables from its eastern shore.

A light is exhibited, at an elevation of 188 feet (57^m3), from a grey circular stone building, 15 feet (4^m6) in height, situated on the summit of Elephant's Back.

Charts 3660, 7.

Between Elephant's Back and Ras Tarshain (Tarshyne), the western extremity of Aden peninsula and $1\frac{1}{4}$ miles north-westward, the south-western coast of the peninsula forms a bay.

Chart 3660.

From Ras Tarshain the western coast of the peninsula trends about 6 cables north-north-eastward to Ras Marbut, on which stands Mole battery and the Storm signal station; the Port Control signal station, on a 188-foot (57^m3) hill, about 3 cables east-south-eastward of Ras Marbut, is conspicuous.

From Ras Marbut the northern coast of the peninsula has an east-north-easterly direction for about $1\frac{1}{4}$ miles to Ras Hedjuff.

Charts 7, 3661, 6b, 8e.

Chart 3660.

The clock tower, situated on a hill, 137 feet (41^m8) high, about 5½ cables eastward of Ras Marbut, is very conspicuous.

- Flint island, the eastern extreme of which is situated about 6½ cables westward of Ras Hedjuff, lies about three-quarters of a cable offshore ; it has a flagstaff near its western end. The island is fringed by a reef and shoal water extends, in places, to a distance of half a cable off it. Passage through the channel between this island and the coal wharves, southward of it, is prohibited, owing to the presence of pipe lines.
- 10 Jerama beacon, 50 feet (15^m2) in height, stands on a rock, above water, situated about three-quarters of a cable northward of Ras Hedjuff.

Chart 7.

- Anchorage.**—The several rocky points which project from Aden peninsula form small bays affording temporary shelter to small craft during offshore winds.

Small craft can find anchorage north-eastward of Aden town and in Bandar Hokat ; depths of less than 5 fathoms (9^m1) extend to a distance of from 4 to 8 cables offshore in this locality.

- 20 The depths north-eastward of Sirah and of Aden town are regular, so that vessels can anchor, as convenient, in depths of from 5 to 10 fathoms (9^m1 to 18^m3), sand and mud. During the north-east monsoon a heavy swell sets in, but from June to August, with westerly winds, there is good anchorage and smooth water under the lee of Sirah.
- 25 During these months, for vessels only wishing to communicate with the authorities, this anchorage may be found convenient, being close to Aden town. The hot dry gusts blowing from over the hills are usually strong and disagreeable.

- Small vessels can obtain anchorage in Bandar Daras, sheltered by Ras Marshaq, in depths of from 12 to 22 feet (3^m7 to 6^m7).

The anchorages in Aden harbour (*Lat.* 12° 47' N., *Long.* 44° 59' E.) are described on pages 161-162.

Charts 3660, 7.

- ADEN HARBOUR.**—This harbour, also known as Bandar Taw-
35 āyih, is entered between Little Aden and Aden peninsulas ; it is divided into two parts by a sandbank, which dries, and which extends from a point on the northern side of the harbour, about 1½ miles north-north-westward of Ras Hedjuff, in a southerly direction for a distance of about 1½ miles. A rubble mound, extending 1½ miles in a southerly
40 direction from the northern side of the harbour, has been constructed on this sandbank, and it is proposed to extend this mound for about 2½ cables in a west-south-westerly direction from its southern end.

- For administrative purposes the bay is divided into the Outer and the Inner harbour ; the Outer harbour includes all the area northward
45 of a line joining the southern extremities of Ras Abu Qiyama and Round island and south-westward of a line drawn 310° from the flagstaff on the extremity of Ras Marbut (page 155) to the northern side of the bay ; the Inner harbour includes the area eastward of the latter line.

- 50 **Depths.**—There are depths of from 6½ to 10 fathoms (12^m3 to 18^m3) in the entrance to the Outer harbour, decreasing to depths of 5 fathoms (9^m1) about 2 miles northward, and then to depths of 2 fathoms (3^m7) about 6 cables from the northern side of the harbour and about one

Charts 7, 3661, 6b, 8e.

Charts 3660, 7.

mile from the western side, northward of Little Aden peninsula ; the bottom is sand and mud.

Chart 3660.

A straight channel, trending north-eastward, about $1\frac{1}{2}$ miles long, 5 one cable wide, which, in 1939, had been dredged to a least depth of 32 feet (9^m8), leads from the Outer to the Inner harbour.

The Inner harbour, for about $1\frac{1}{4}$ miles eastward of the dredged channel, had, in 1939, a least depth of 32 feet (9^m8), but vessels of greater draught, when the tides permit, can gain access to berths which, 10 in 1939, had least depths of 34 feet (10^m4).

For a distance of about 5 cables eastward of the dredged area, the harbour, within an area of from one to $2\frac{1}{4}$ cables wide, has depths of from 13 to 19 feet (4^m0 to 5^m8) ; it then opens into the eastern bay. There are depths of from 11 to 17 feet (3^m4 to 5^m2) close northward of 15 the dredged area, and close southward of it are depths of less than 3 fathoms (5^m5) as shown on the chart.

Pilotage.—Pilotage is compulsory for merchant vessels entering the Inner harbour. A man-of-war, on entering, will, if possible, be shown her berth by an official from the Port Officer's department. 20

All vessels, including men-of-war, proceeding to and from the oiling berths, must take a pilot.

No merchant vessel exceeding 200 tons is permitted to enter, leave, or be moved in the Inner harbour without having on board a pilot, the Harbour Master, or the assistant to the Port Officer or Harbour 25 Master ; this applies also to merchant vessels of less than 200 tons unless exempted by the Conservator of the port. All merchant vessels arriving off the port (*Lat. 12° 47' N., Long. 44° 59' E.*) and wishing to enter the Inner harbour must make the usual pilot signal and remain in the Outer harbour until boarded by the pilot. A pilot approaching 30 a steam-vessel entering at night will burn a *blue* light.

Channel control signals.—A red flag by day, or two *red* lights, disposed vertically 6 feet (1^m8) apart, at night, shown on the Port Control signal station flagstaff, indicate that the dredged channel is 35 closed.

By day, a green ball displayed at this signal station indicates that the channel is clear for vessels to enter and a red drum that it is clear for vessels to leave the Inner harbour. At night a *green* light exhibited at the signal station indicates that the channel is clear for vessels to enter and a *red* light that it is clear for vessels to leave the Inner 40 harbour.

These lights should not be confused with the small *green* and *red* lights exhibited temporarily on the western wall of the signal station tower, nor with the combinations of coloured lights used as distinguish- 45 ing signals for the information of shipping agents.

About $3\frac{1}{4}$ cables north-eastward of the above-mentioned signal station is a relay signal station which repeats certain signals shown from the main signal station.

No vessel may enter the dredged channel or Inner harbour, or leave her moorings, unless the channel control signals show that the channel 50 is clear for her to do so.

Dredger signals.—Dredging operations are constantly in progress.

The dredger while at work shows the following signals :—By day.—A black ball at the masthead and at the yardarm on the side on which

Chart 3660.

work is in progress. At night.—A *white fixed* light at the masthead, a *red fixed* light at the yardarm on the side at which work is in progress, and a *white fixed* light at the yardarm on the side on which vessels should pass.

Harbour signals.—Copies of the Port office and general signals in use at Aden can be obtained at the Port offices.

Charts 3660, 7.

Storm signals.—The following signals are shown from the storm signal station on Ras Marbut, and from the signal station on Ras Marshaq (Lat. 12° 46' N., Long. 45° 03' E.).

The Meteorological Department will supply the Port officer, to whom application should be made for supplementary information, with the latest information regarding all disturbances.

Distant signals, to indicate danger to vessels after they have left the port :—

Note.—In the night signals ○ represents a *white* light and ● a *red* light.

I. Cautionary.—*There is a region of squally weather in which a storm may be forming.*

NOTE.—This signal is made when the disturbed weather is situated so that a vessel leaving the port might run unto danger, and also when a disturbance is crossing the peninsula of India.

II. Warning.—*A storm has formed.*

NOTE.—This signal will be hoisted when there is no immediate danger of the port itself being affected, but vessels leaving the port might run into the storm.

Local signals, to indicate that the port and vessels in it are threatened :—

III. Cautionary.—*The port is threatened by squally weather.*

IV. Warning.—*The port is threatened by a storm, but it does not appear that the danger is as yet sufficiently great to justify extreme measures of precaution.*

NOTE.—The existence of a storm can often be determined before the direction of its motion can be ascertained ; in this case the signal will be made if the storm could possibly strike the port.

V. Danger.—*The port will experience severe weather from a storm of slight or moderate intensity that is expected to pass southward of the port.*

Charts 7, 3661, 6b, 8e.

Day.

Night.


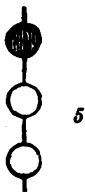

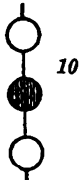

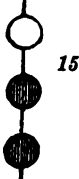



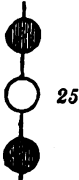




Day.

Night.



Charts 3660, 7.

	Day.	Night.
VI. Danger.—The port (<i>Lat. 12° 47' N., Long. 44° 59' E.</i>) will experience severe weather from a storm of slight or moderate intensity that is expected to pass northward of the port.		
VII. Danger.—The port will experience severe weather from a storm of slight or moderate intensity that is expected to pass over or near to the port.		
VIII. Great danger.—The port will experience severe weather from a storm of great intensity that is expected to pass the coast southward of the port.		
IX. Great danger.—The port will experience severe weather from a storm of great intensity that is expected to pass the coast northward of the port.		
X. Great danger.—The port will experience severe weather from a storm of great intensity that is expected to pass over or near to the port.		
XI. Failure of communications.—Communication with the meteorological head-quarters has broken down, and the local officer considers that there is danger of bad weather.		

Charts 3661, 6b, 8e.

Charts 3660, 7.

Time signals.—Time signals are made daily from the signal station on Ras Marshaq. Chronometers may be compared at the Eastern Telegraph Company's office, about three-quarters of a mile east-south-eastward of Ras Tarshain, where a time signal is received daily from Greenwich.

Regulations.—All steam vessels and square rigged vessels within the limits of the Port of Aden (*Lat. 12° 47' N., Long. 44° 59' E.*) shall take up such berths as may be appointed for them by the Port Officer and shall shift their berths or leave when required by him.

Vessels are not to pass each other under way in the Inner harbour or entrance channel.

If a vessel is entering the Inner harbour at the same time as another intends to leave the latter has the preference.

Vessels in the Inner harbour shall anchor, moor or unmoor where and when required by the Port Officer

Vessels of 12 feet (3^m7) and more draught must not remain at single anchor in the Inner harbour without permission.

Chart 3660.

Light-buoys.—A conical light-buoy, painted in black and white horizontal bands, and exhibiting a *white group flashing light every 24 seconds, flash one second, eclipse half a second, flash one second, eclipse half a second, flash one second, eclipse twenty seconds*, is moored in the fairway at the entrance to the dredged channel leading to the inner harbour, about one mile westward of Ras Tarshain.

The south-eastern side of the dredged channel is marked by a red conical light-buoy, exhibiting a *red flashing light every five seconds*.

The north-western side of the dredged channel is marked by two black can light-buoys, each exhibiting a *white flashing light every five seconds*.

The northern limit of the dredged area in the Inner harbour is marked by three black can light-buoys, each exhibiting two *white fixed lights*, disposed vertically.

The southern limit of the dredged area in the Inner harbour is marked at its eastern end by two red conical light-buoys, each exhibiting a *red fixed light*. At the oiling berths abreast Flint island are moored six oil pipe terminal buoys, lettered A to F, painted black and green and each exhibiting a *red fixed light*.

A conical light-buoy, No. 4, painted red and exhibiting a *red fixed light*, is moored in the prohibited anchorage, about 3½ cables west-south-westward of the western side of Flint island.

The black channel buoys usually present a whitish appearance owing to bird droppings and are, for this reason, not easy to identify from a distance; the red buoys are comparatively unblemished.

Chart 7.

Islands and dangers.—**Buoy.**—**Beacon.**—Patches, with least depths of 18, 14 and 14 feet (5^m5, 4^m3 and 4^m3) over them, lie about 2½ miles west-north-westward, 2½ miles west-north-westward and 1½ miles westward, respectively, of Ras Marbut.

Chart 3660.

A shoal, with a least depth of 8 feet (2^m4), is situated about one mile westward of Ras Marbut.

Flint island, off-lying the northern coast of Aden peninsula, and Jerama beacon, northward of Ras Hedjuff, are described on page 156.

Charts 7, 3661, 6b, 8e.

Chart 7.

Aliya (*Lat. 12° 49' N., Long. 45° 00' E.*), an islet lying on the eastern side of the sandbank which divides Bandar Tawāyih, has on its south-western side a pole beacon, surmounted by a diamond, 67 feet (20^m4) in height; Jam Ali, a rock above water, lies close off the western extreme of this islet. 5

Jazirat Sawayih or Slave island, lies on a bank, which dries, on the eastern side of the harbour, with its southern extremity about 1½ miles east-north-eastward of Ras Hedjuff (Hujaf); a spit, on which are two above-water rocks and two islets, known as Kais al Hamman and Kalfetein, extends about 4 cables southward of the southern end of Slave island. 10

Marzuk Kabir islet, which is fringed by a reef, lies about 4 cables westward of the southern end of Slave island; shoal water extends to a short distance from this reef. 15

Charts 3660, 7.

Spoil ground.—Dredging spoil is deposited in an area, the limits of which are indicated by pecked lines on chart 7, in the north-western part of the harbour. 20

Chart 3660.

Piers.—Light.—Between Pilots Bandar pier, which is situated half a cable eastward of Ras Marbut, and Prince of Wales pier, about 4½ cables east-north-eastward of Pilots Bandar pier, are Military pier and Post Office pier; Pilots Bandar pier has a depth of 3 feet (0^m9) alongside its head, Post Office pier, 9 feet (2^m7), and Prince of Wales pier, 10 feet (3^m0). 25

A light is exhibited from the head of Pilots Bandar pier.

Chart 7.

Maala Bandar pier, situated at the village of that name, about 1½ miles eastward of Ras Hedjuff, has a depth of 6 feet (1^m8) alongside its head, and has six cranes on it, the largest capable of lifting 5 tons. 30
Petroleum pier, about one cable east-north-eastward of Maala Bandar pier, has a depth of 6 feet (1^m8) alongside its head, and Obstruction pier, about 3½ cables north-north-eastward of Petroleum pier, has a depth of 4 feet (1^m2) alongside its head, and a crane, capable of lifting 12 tons, on it. 35

Charts 3660, 7.

Tidal streams.—On the rising tide, during both monsoons, the tidal stream sets strongly north-eastward past Ras Marbut until it is checked by the bank on the northern side of the harbour and is then deflected eastward and north-eastward past Aliya and to the upper reaches of the harbour. At about half flood, a distinct easterly set is experienced between Aliya and the mainland north-westward. 40

On the falling tide the stream curves westward by Jerama beacon and then flows along the southern side of the harbour past the Prince of Wales pier, continuing with a more southerly trend after passing Ras Marbut. 45

The estimated average maximum rate at springs is 1½ knots, but it depends on the strength and direction of the monsoon.

Anchorage.—In the Outer harbour vessels may anchor northward of a line joining Jazirat Salil and Ras Tarshain, provided that they do not anchor in the approach to the entrance of, or in the dredged channel leading to the Inner harbour (*Lat. 12° 47' N., Long. 44° 59' E.*). A ground swell at times sets into this harbour during the south-west monsoon. 50

Charts 7, 3661, 6b, 8e.

Chart 7.

The quarantine anchorage for sea-going vessels is south-westward of the entrance to the dredged channel, as indicated by pecked lines on the chart.

5 Chart 3660.

The quarantine anchorages for coasting steamers of under 200 tons and for local craft lie northward of the eastern part of the dredged portion of the Inner harbour, as indicated in pecked lines on the chart.

- 10 Vessels lying in the Inner harbour during May, July and August, should be well secured to the mooring buoys against the sand-storms which occur at these periods; if anchored both bower anchors should be used.

Charts 3660, 7.

- 15 The head of the harbour, or eastern bay, eastward of Ras Hedjuff, is available for small native craft, there being depths of about 2 fathoms (3^m7) about one mile north-eastward of Ras Hedjuff.

Prohibited anchorage.—Anchorage is prohibited southward of a line joining Jazirat Saill and Ras Tarshain.

- 20 No vessel, except by order of the Port Officer, may anchor within the area surrounding Flint island as shown in pecked lines on chart No. 3660.

Chart 3660.

- Mooring buoys.**—On the southern side of the Inner harbour, from 25 about abreast the Military pier to about 2 cables eastward of Flint island, are two breast buoys at each of the oiling berths.

There are several mooring buoys in this part of the Inner harbour; their positions can best be seen on the chart.

Charts 3660, 7.

- 30 **Directions.**—Aden and Little Aden peninsulas are so prominent that there is no difficulty in identifying the approach to the harbour, which lies between them. See view on chart No. 7.

- A vessel approaching from westward should pass about one mile southward of Little Aden peninsula or if approaching from eastward 35 a similar distance southward of Aden peninsula, and when in the fairway of the approach she should steer to pass about one mile westward of Ras Tarshain and either proceed to an anchorage in the Outer harbour or approach the black and white light-buoy in the entrance to the dredged channel so as to pass it closely on either side; a north- 40 easterly course should be held through the dredged channel, passing midway between the light-buoys. When north-westward of Ras Marbut a vessel should bear eastward into the Inner harbour, leaving a black can lightbuoy on the port hand, and proceed to a mooring berth as directed. Vessels moor with an anchor ahead and the stern 45 secured to a mooring buoy.

- At night, a vessel approaching from westward should steer for Elephant's Back light (Lat. 12° 46' N., Long. 44° 59' E.), with that light bearing 061°, the intersection of the *red* and *white* sectors; when about 2 miles from the light course should be shaped for a point 50 about midway between Ras Tarshain and the light-buoy, one mile westward, and she should then proceed as directed above. Coming from eastward a vessel should steer to pass about 1½ miles southward of Ras Marshaq light and continue a westerly course until Elephant's Back light shows *white*, between the bearings of 322° and 061°, when

Charts 7, 3661, 6b, 8e.

Charts 3660, 7.

course should be altered gradually northward for a point about one mile westward of Ras Tarshain and she should then proceed as previously directed.

Town.—The town of Aden, known locally as Crater, is situated on the north-eastern part of Aden peninsula and about 4 miles by road from Ras Marbut; it consists of a large number of whitewashed houses of stone or mud built on a plain, with steep rocky hills on all except the seaward side of the town. The population, in 1931, was 51,478. Crater is the principal business centre of the Aden peninsula. *Chart 7.*

Ma'ala village consists chiefly of small stone and mud houses and is the port for nearly all the native trade with the interior.

Chart 3660.

On the southern side of the Inner harbour, between Ras Marbut and Ras Hedjuff lies Tawahi, a comparatively modern town with more than 10,000 inhabitants. Near Prince of Wales pier are the Government Secretariat, the Aden Port Trust office, the telegraph and post offices.

Communications.—Aden is connected with the general telegraph system.

There is frequent steamer communication with all the principal ports and, chiefly by dhows, with ports on the Somali coast.

There is a radio station at Aden, *see* page 25.

Port facilities.—There are large stocks of coal available; coaling is effected from lighters, by day or night, and in the Inner harbour is not subject to interruptions from weather but in the Outer harbour, during the south-west monsoon, it is liable to interruption from winds, and is seldom carried out except in special circumstances. Numerous lighters are available.

There are large stocks of fuel oil, which is taken on board at six oiling berths, and can be supplied at a rate of from 300 to 600 tons an hour; it is also supplied in barges at any berth in the Inner harbour. Diesel oil is also readily obtainable.

Provisions of all descriptions can be procured. There is an ample supply of bore-well water; distilled water can be obtained.

Moderate repairs to hull and machinery can be carried out. Cranes capable of lifting 10 tons are available, and gear suitable for constructing sheer-legs capable of lifting 50 tons is kept in readiness. There are three large launches fitted with fire pumps. The services of a diver can be secured. There is a pontoon dock, *see* Appendix I, also four slips available for small craft of up to 5 feet (1^m5) draught.

There are two hospitals above the Post office pier with accommodation for Europeans and natives. There is also a zymotic hospital.

The quarantine station is on Flint island. Fumigation of small vessels can be carried out in an emergency.

Trade and shipping.—Aden was declared a free port in 1850, and the only duties charged are on liquor, opium and salt. Aden (Lat. 12° 47' N., Long. 44° 59' E.) is the principal centre for trade in the Red sea district, as it has shipping connections with ports not usually visited.

In 1939, 2,004 vessels, with an aggregate tonnage of 8,005,764, of which 1,300 were British, entered this port.

The description of the northern side of the Gulf of Aden is continued on page 387.

Charts 7, 3661, 6b, 8e.

CHAPTER V

WESTERN SIDE OF THE RED SEA FROM
THE GIFÂTÎN ISLANDS TO RAS KASAR

Charts 8a, 8b, 8c, 8d.

GENERAL REMARKS.—The western side of the Red sea south-eastward to the parallel of 22° N. is Egyptian territory, and thence to Ras Kasar, about 260 miles south-south-eastward, is part of Anglo-
5 Egyptian Sudan. A range of mountains extends southward at varying distances inland, and from westward of Safâga island, about 25 miles southward of the southern end of the Gifâtîn islands (*Lat.* $27^{\circ} 14' N.$, *Long.* $33^{\circ} 55' E.$), to Ras Hadârba (Cape Elba), about
10 200 miles farther south-eastward, approaches the coast. The land between the mountains and the coast is low and sandy. This coast is bordered by reefs, and there are many others lying some distance offshore.

Chart 8c.

Between Ras Abu Shagara (Sandy cape), about 65 miles south-south-
15 eastward of Ras Hadârba, and Suâkin, about 115 miles further southward, is Inner channel; this channel, lying between the outlying reefs and the coastal reef, is generally smooth, and is useful for small vessels with local knowledge. It is from $1\frac{1}{2}$ to 3 miles wide, except near Ras Abu Shagara, the Tiflah (Teila) islets, about 22 miles southward of Ras
20 Abu Shagara, and Marsa Salak, a further 12 miles southward, where it narrows to about half a mile. From Ras Abu Shagara to Marsa Salak, the most intricate part of the channel, the depths are mostly moderate, and again from Marsa Fijja (Mersa Fijâb), about 23 miles southward of Marsa Salak, to Marsa Darûr, a further 12 miles south-
25 south-eastward; in other parts this channel is deep.

In most of the anchorages it is advisable to moor and, in many places, during strong winds, it may be prudent to lay out a stream anchor on, or near, the weather beach.

The two principal entrances to the Inner channel from seaward are
30 off Port Sudan, and Suâkin, respectively; Port Sudan, which is the principal harbour on this coast, is about 30 miles north-north-westward of Suâkin.

For Meteorological tables, see pages 54 and 55.

Charts 8a, 8b, 8c, 8d.

35 **Local weather.**—See pages 37-41.

Chart 2523.

Charts 2838, 8a.

MERLIN POINT TO RAS BANÂS.—Coast.—Aspect.—Islet and dangers.—From Merlin point (page 109) the coast trends about 27 miles south-south-eastward to a point about half a mile westward of Safâga island.

5

Charts 8a, 8b.

South-eastward of Gebel Shâyib (page 101) the coastal range gradually decreases in elevation as it approaches the coast and, in the vicinity of Safâga island, is from about 700 to 1,800 feet (213^m4 to 548^m6) high ; Gebel el Maqal (Jebel el Mogul), about 15 miles east-south-eastward of Gebel Shâyib, is 4,068 feet (1,239^m9) high ; eastward of this latter mountain the coast, as far as Quseir (Qosier), about 40 miles south-south-eastward of Safâga island, is low, rising gradually to mountains, about 2,000 feet (609^m6) high, 5 miles inland.

15

Charts 14, plan of Safâga island anchorages ; 8a.

Gebel Nuqâra, about 14 miles south-eastward of Gebel el Maqal, attains an elevation of 2,735 feet (833^m6) ; it is the southern end of the range of which Gebel Shâyib is the summit. See view on chart 8a.

Chart 2838.

20

The islets and dangers outlying the coast for about 3½ miles southward of Merlin point (*Lat. 27° 12' N., Long. 33° 51' E.*) are described on pages 110-111.

Between Merlin point and Dishet el Dhaba' (Dish tal Kora-thaba), a promontory, 328 feet (100^m0) high, about 8 miles south-south-eastward, the coast is fringed with a reef ; a reef extends about 3 cables south-eastward of the south-eastern end of Dishet el Dhaba'.

25

On the southern side of Dishet el Dhaba' is Marsa Abu Makhadiq (Mersa Abû Mokhadij), which has moderate depths and is sheltered from seaward by Sa'l Hashîsh islet ; this islet, which is 10 feet (3^m0) high and is situated about 1½ miles south-eastward of the south-eastern end of Dishet el Dhaba', lies at the northern end of a reef, which dries, and extends about 1½ miles southward of it ; a 3-fathom (5^m5) patch lies about 3 cables westward of the western edge of this reef. The eastern edge of this reef is steep-to.

35

Charts 14, plan of Safâga island anchorages ; 8a.

Between the point on the mainland westward of the southern end of the reef extending southward of the southern end of Sa'l Hashîsh islet and Ras Abu Sôma, about 8 miles south-eastward, the coast is fringed by a reef, which is steep-to ; Sherm el Nâqa (Sherm ah Naggah), situated on the coastal reef, which here extends about 2 cables offshore, about 2 miles west-north-westward of the north-eastern point of Ras Abu Sôma, is a small above-water rock.

40

Chart 2838.

Anchorage.—Marsa Abu Makhadiq affords anchorage in depths of from 15 to 20 fathoms (27^m4 to 36^m6), mud ; during northerly winds, however, by carefully approaching the reef fringing the northern entrance point, anchorage in lesser depths may be obtained, but vessels must exercise caution as there are some detached rocks close to the reef.

50

A pier extends from a position about 3 cables within the northern entrance point of Marsa Abu Makhadiq ; in 1938, there was a depth of 20 feet (6^m1) alongside the head of this pier.

Anchorage may be obtained southward of Sa'l Hashîsh islet, in

Charts 8a, 2523.

G*

Chart 2838.

depths of from 6 to 10 fathoms (11^m0 to 18^m3), sand and coral, with that islet bearing 008° , distant about $1\frac{1}{2}$ miles.

Sherm al 'Arab, the northern entrance point of which is situated about 2 miles south-south-westward of Sa'l Hashish islet, is a small and well sheltered boat harbour with a rock, above water, lying on the southern side of its entrance.

Chart 14, plan of Safâga island anchorages.

Safâga island and vicinity.—Beacons.—Anchorage.—Arpha bank, with a least depth of 12 fathoms (21^m9) over it, lies about $5\frac{1}{2}$ miles south-south-eastward of Ras Abu Sôma and $2\frac{1}{2}$ miles from the eastern side of Safâga island.

Panorama reef, about $4\frac{1}{2}$ miles eastward of the eastern side of Safâga island (*Lat. $26^\circ 46' N.$, Long. $34^\circ 00' E.$*), dries, and lies on a bank, with depths of less than 100 fathoms (182^m9); this reef is marked at its north-western end by a red tripod, surmounted by a diamond.

A bank, with a least known depth of 13 fathoms (23^m8) over it, lies with its northern end about 6 cables southward of Panorama reef, and extends $8\frac{1}{2}$ cables south-south-westward.

Middle reef, over which the sea breaks, dries one foot (0^m3), and lies about $2\frac{1}{2}$ miles south-south-eastward of Panorama reef; a bank, the south-western part of which is unexamined, extends 6 cables north-north-eastward and 8 cables south-eastward of Middle reef; a reef, with depths of less than 6 feet (1^m8), lies on this bank, about 5 cables east-south-eastward of Middle reef.

Fellowes rocks, 2 miles west-south-westward of the western edge of Middle reef, have depths of less than 6 feet (1^m8) over them; these rocks lie on a bank, the northern end of which is situated $1\frac{1}{2}$ miles southward of Panorama reef, and extends $3\frac{1}{2}$ miles south-south-westward; the south-western part of this bank has not been examined.

Hyndman reefs, which are awash and dry in places, lie $3\frac{3}{4}$ miles south-eastward of the southern extremity of Safâga island; these reefs extend about 2 miles south-eastward. The area close south-westward of Hyndman reefs is unexamined; an 18-fathom (32^m9) patch lies between these reefs and the coast south-westward.

A reef, which dries 4 feet (1^m2) and is steep-to, lies $2\frac{1}{4}$ miles eastward of Hyndman reefs.

Ras Abu Sôma, with a summit of gravel, is a projecting headland, slightly higher than the coast in its vicinity, and is fringed by a reef, which is steep-to and which extends about 4 cables south-eastward of its south-eastern end.

Between the south-eastern end of Ras Abu Sôma and Safâga Ulbur, about 14 miles southward, the coast is fronted by islets and reefs.

The Tûbya (Coral and Sandy) islets consist of two islets lying on a coral reef; the northern islet is situated about one mile west-south-westward of the southern extreme of Ras Abu Sôma, near the northern end of this reef; the southern islet, at the southern end of the reef, is low-lying. Between the north-eastern side of this coral reef and the reef bordering the southern end of Ras Abu Sôma is a rock, with a depth of less than 6 feet (1^m8) over it. The coastal reef, with a small cay on it, extends to a distance of about 8 cables offshore, north-westward of the northern islet.

North Fairway reef, which dries, lies about 9 cables eastward of the southern end of the southern Tûbya islet, and there are other reefs

Chart 14, plan of Safâga island anchorages.

within 4 cables south-south-westward of it ; South Fairway reef, which dries, lies $7\frac{1}{2}$ cables south-south-westward of the southern end of North Fairway reef. There are passages northward and southward of these reefs, but the northern passage is the only one recommended. 5

Safâga island (*Lat.* $26^{\circ} 46' N.$, *Long.* $34^{\circ} 00' E.$), which is separated from South Fairway reef by a channel, the south-western part of which is encumbered with reefs and shoals, is low and sandy, with a conspicuous sandy-coloured table-topped hill, 87 feet (26^m5) high, rising from a projection on its north-eastern side ; a conspicuous 10 pyramidal stone beacon, 35 feet (10^m7) in height, painted in red and white horizontal bands, stands on this hill. The island is bordered by a reef which extends about $1\frac{1}{2}$ miles west-north-westward of its northern extreme, 7 cables from its north-eastern side, to as much as $4\frac{3}{4}$ cables from its eastern side, about one cable southward of its southern 15 end, and to as much as $3\frac{1}{4}$ cables from its western side. Some detached rocks lie about $2\frac{1}{2}$ cables southward of the southern extremity of this island and are marked on their south-eastern side by a black tripod beacon, surmounted by a cone over a cube and fitted with red reflectors, which is known as Morewood beacon. 20

There is a narrow shallow channel between the mainland and the north-western side of Safâga island ; there is a bar across it, with a greatest depth of 2 fathoms (3^m7).

Spit reef extends about $2\frac{3}{4}$ miles north-north-eastward from the coast about $3\frac{3}{4}$ miles south-south-westward of the southern extremity 25 of Safâga island ; a sandy spit, which dries 2 feet (0^m6), is situated on the eastern side of this reef. Some shoals, with a least depth of 6 feet (1^m8), lie within a distance of 7 cables northward of the northern end of Spit reef.

Cannon reef, which dries one foot (0^m3), and the northern end of 30 which is situated about $2\frac{1}{2}$ miles southward of the southern end of Safâga island, extends southward to within a short distance of the coastal reef.

Anchorage may be obtained westward of Ras Abu Sôma, in a depth of 7 fathoms (12^m8), with the western extreme of the northern Tûbya 35 islet bearing 180° and the southern extremity of Ras Abu Sôma bearing 097° . A vessel proceeding to this anchorage should steer southward through the channel between North Fairway reef and the southern Tûbya islet, passing about 3 cables southward of that islet ; she should then alter course northward for the anchorage, passing along the 40 western side of the reef on which are the Tûbya islets, taking care to avoid the coastal reef north-westward of the northern islet and the shallow bank extending about 2 cables from the coastal reef.

Anchorage, sheltered from northerly winds, can also be obtained, in depths of 8 fathoms (14^m6), sand and coral, on the bank extending 45 3 cables south-westward of the southern Tûbya islet.

Port Safâga—Landmarks.—Port Safâga, entered between Morwood beacon and the northern end of Spit reef, affords shelter from northerly winds ; south-easterly winds cause a swell to set in. The settlement on the mainland, which had a population, in 1932, of about 50 200, including 8 Europeans, is situated about $3\frac{1}{4}$ miles north-westward of the southern extreme of Safâga island ; this settlement, together with the phosphate works, form a conspicuous group of buildings which, in 1942, were painted yellow. The manager's house, a white

Chart 14, plan of Safâga island anchorages.

building about a quarter of a mile inland, is easily identified, and there is a conspicuous black chimney about $2\frac{1}{2}$ cables east-south-eastward of the manager's house; other conspicuous objects are the
 5 iron framework transporter at the head of the pier, about $1\frac{1}{2}$ cables eastward of the conspicuous chimney (*Lat.* $26^{\circ} 44' N.$, *Long.* $33^{\circ} 56' E.$), and some warehouses near it.

Safâga is connected with the Egyptian railway and telegraph systems.

One small tug and several lighters are available.

- 10 **Beacons.**—Two beacons are situated on the north-western side of the harbour; the front beacon, 36 feet (11^m0) in height, pyramidal-shaped and painted with red and white horizontal bands, stands on the coast about $2\frac{1}{2}$ cables north-eastward of the manager's house, and the rear beacon, situated about 5 cables north-westward of the front
 15 beacon, consists of a 20-foot (6^m1) spar, surmounted by a rectangle, painted in black and white vertical stripes.

In addition to the beacons described above there are the following navigational beacons:—"A", "B", and "C" beacons situated on the coast about $1\frac{1}{2}$ miles north-north-eastward, $1\frac{1}{2}$ miles north-eastward,
 20 and $7\frac{1}{2}$ cables north-north-eastward, respectively, of the front beacon described above; "D", "E", "F", "G", and "H" beacons, standing on the coast about $1\frac{1}{2}$, $2\frac{1}{2}$, $3\frac{1}{2}$, $4\frac{1}{2}$, and 5 miles, respectively, southward of the same front beacon. "B", "C", "D", "E", "F", and "G" are each 20 feet (6^m1) in height; "B" and "G" are
 25 each surmounted by a triangle, and "C", "D", "E", and "F" by a circle. "A" and "H", 30 feet (9^m1) in height, are each surmounted by a square.

- Dangers.**—The reef and rocks bordering the southern and western sides of Safâga island, also the dangers on the south-western side of the
 30 entrance to the port, are described on page 166.

A shoal, with a depth of 26 feet (7^m9) over it, and another, with a depth of 27 feet (8^m2), lie in the fairway, about $2\frac{1}{2}$ miles south-eastward of the front beacon described above; both these shoals are marked by a dan buoy, displaying a green flag and a red flag, respectively.

- 35 A shoal, with a depth of 3 fathoms (5^m5) over it, lies about 4 cables north-eastward of the same beacon and about one cable offshore.

A wreck, with parts of the mast and funnel showing, in 1942, lies near the northern end of the harbour, about $4\frac{1}{2}$ cables north-eastward of the front beacon described above and 2 cables offshore.

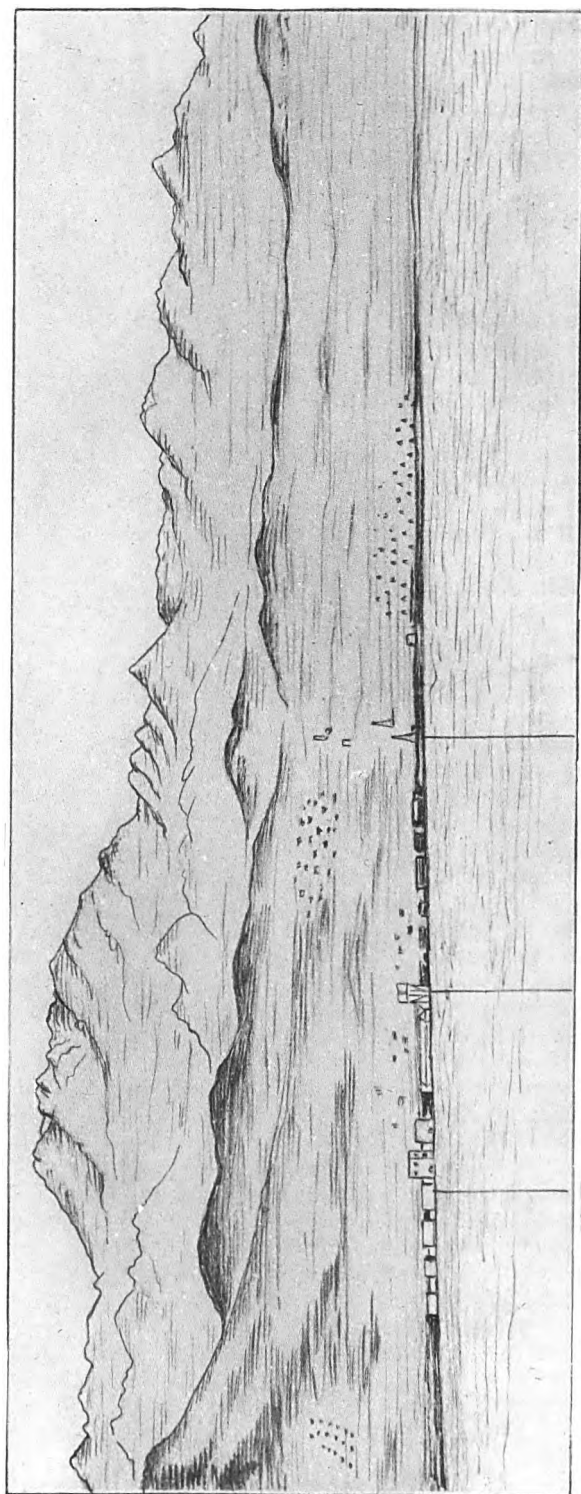
- 40 **Piers.**—A pier, 52 feet (15^m9) in width, with a least depth of 28 feet (8^m5) alongside its head, is situated in front of the settlement; it is connected with the railway system. Vessels lie alongside the head of this pier, off which securing and hauling-off buoys are moored. Southward of this pier is a quay for lighters.

- 45 There is another pier about 3 cables northward which, in 1942, was reported to be in ruins.

- Anchorage.**—Sheltered anchorage may be obtained in depths of from 10 to 16 fathoms (18^m3 to 29^m3), off the south-western side of Safâga island, with the southern extremity of that island bearing 115° ,
 50 distant about 7 cables, and Safâga island beacon bearing 010° .

H.M.S. *Weston*, in 1936, anchored in depths of 15 fathoms (27^m4), mud and sand, good holding ground, with the front beacon bearing 290° , distant about $2\frac{3}{4}$ cables. This anchorage was clear of shipping going alongside the pier.

To face page 169.



Yellow buildings.

Elevator.

*Beacons in line, bearing 310°,
distant 2½ miles*

South-eastern approach to Port Safaga.
(Original dated 1943.)

Chart 14, plan of Safâga island anchorages.

There is good anchorage anywhere in the port in depths of from 14 to 19 fathoms (25^m6 to 34^m7).

Directions.—A vessel from northward should approach with the red and white beacon on the north-eastern extremity of Safâga island (Lat. 26° 46' N., Long. 34° 00' E.) bearing 265°, which leads 9 cables northward of Panorama reef; when about 2 miles from this beacon course should be altered south-south-westward and she should steer to pass not less than 5 cables eastward and southward of Morewood beacon. If proceeding to the head of the harbour she should steer with the front and rear beacons in line, bearing 310°, and pass between the buoys marking the two shoals lying in the fairway, with depths of 26 and 27 feet (7^m9 and 8^m2) over them, respectively. See view facing this page.

Charts 14, plan of Safâga island anchorages; 8a.

A vessel from southward should approach with Gebel Nuqâra bearing 305° until about one mile from the coast and, when Safâga island beacon bears about 341°, course should be altered north-north-westward to pass midway between Cannon and Hyndman reefs; when Morewood beacon has been identified a vessel can proceed as directed above.

Chart 14, plan of Safâga island anchorages.

There are no pilots, but the manager of the works or his representative will meet vessels inside the entrance. In the event of no launch meeting the vessel, owing to rough weather or unforeseen circumstances, she should anchor southward of the pier clear of all buoys.

Charts 8a, 8b.

Coast.—Aspect.—Dangers.—The coast from Safâga Ulbur trends about 35 miles south-south-eastward to Quseir and is fringed for most of its length by a reef, in which are some openings forming good boat harbours; this reef, which is steep-to, extends from about a quarter of a mile to half a mile offshore. The coast then trends about 38½ miles south-south-eastward to Ras Hamra (Hamrhu); for about 18 miles southward of Quseir the coast is fringed by a reef.

The coast, as far as Quseir, as stated on page 165, is low, rising gradually to mountains, about 2,000 feet (609^m6) high, from about 5 to 6 miles inland.

Charts 14, plan of Safâga island anchorages; 8a, 8b.

A conspicuous sharp peak, 1,670 feet (509^m0) high, is situated about 7 miles southward of Gebel Nuqâra; Gebel Quei' (Jebel Kuwéh), a prominent sugarloaf peak, 1,683 feet (513^m0) high, lies about 18 miles south-south-eastward of this conspicuous sharp peak and 6 miles inland.

Chart 8b, with plan of Qosier anchorage.

Gebel Quseir (Jebel Qosier), situated about 14½ miles south-eastward of Gebel Quei' and 3 miles west-north-westward of the town of Quseir, is 446 feet (135^m9) high, and Gebel Gihâniya (Jebel Jehenna), about 2½ miles west-south-westward of the town, is 715 feet (217^m9) high; both hills have cairns on their summits but the latter hill is not easy to identify from southward.

Chart 8b.

Gebel Abu Tiyûr (see view on chart), situated about 23½ miles southward of Gebel Quseir and 16½ miles inland, is 3,606 feet high, and con-

Chart 8b.

spicuous. This mountain, on southerly bearings, appears to have several peaks; on west-south-westerly bearings it appears flattened and, on north-westerly bearings, the northern summits appear rounded
 5 and the southern gradually appear as peaks.

From Gebel Um Shehad, 2,542 feet (774^m8) high, about 6½ miles south-eastward of Gebel Abu Tiyûr (*Lat.* 25° 44' N., *Long.* 34° 10' E.), a range extends for about 12 miles in a south-easterly direction, with three well-defined peaks—Gebel Murer, 1,939 feet (591^m0), about
 10 5½ miles south-eastward of Gebel Um Shehad; Gebel Um Lassaf, 1,952 feet (595^m0), about 2 miles south-eastward of Gebel Murer; and Gebel Abu Dob, 1,525 feet (464^m8) high, about 4½ miles south-south-eastward of Gebel Um Lassaf.

Chart 8a.

15 Kennedy shoal, the northern extremity of which is situated 4 miles south-south-eastward of the northern side of Hyndman reefs, extends 2½ miles south-south-eastward; it lies 2½ miles offshore and has a least known depth of 13 fathoms (23^m8).

Charts 8a, 8b.

20 Quei', an Arab village, is situated about 15 miles south-south-eastward of Ulbur Safâga.

Quei' (Kuwéh) reefs, lying from about 2 to 4 miles offshore eastward of Quei' village, are a group of rocks, above and below water.

There is an opening in the reef, 5 cables southward of Quei', through
 25 which a boat can approach the shore at high water; the best landing place is one mile southward of the village, where there is a good boat harbour. Another boat harbour is situated at Hamrâwein, 6 miles southward of Quei'; Gebel Quei', bearing 279°, leads up to it.

Chart 8b, with plan of Qosier anchorage.

30 About 11 miles south-south-eastward of the latter boat harbour is a low sandy point extending a little from the coastline and on which is situated the town of Quseir, which is a Government station, and the phosphate works; the shores of the small bight southward of this point are fringed by reefs extending from one to 2½ cables offshore,
 35 except at its head where there is a sandy beach. The ruins of a fort stand on the higher ground close north-westward of the town.

Chart 8b.

A reef, with two heads, each of which has a depth of less than 6 feet (1^m8) over it, lies half a mile east-north-eastward of Ras Abu Hagar
 40 (Abû Hajar), a point about 10 miles south-south-eastward of Quseir; Gebel Esel (Jebel es Selle) is a black conical hill standing among some low sandhills about 3 miles west-south-westward of Ras Abu Hagar.

Ras Toronbi, the low northern entrance point of Marsa Toronbi, a small bight in the coast, is situated about 17½ miles south-south-eastward of Ras Abu Hagar. From a point about 4½ miles north-north-westward of Ras Toronbi to a point about 2 miles south-south-eastward of this cape a bank, with depths of from 8 to 21 fathoms (14^m6 to 38^m4)
 45 over it, extends to a distance of 3½ miles offshore; on this bank, a short distance offshore, are some rocks, with depths of less than 6 feet (1^m8).

50 Ras Hamra, 10 miles south-south-eastward of Ras Toronbi, is a red bluff, 272 feet (82^m9) high; the coast in its vicinity is steep-to.

Charts 8a, 8b.

Anchorage.—There is no sheltered anchorage between Ulbur Safâga and Quseir, but temporary anchorage may be obtained by small

Chart 2523.

Charts 8a, 8b.

vessels with local knowledge in a depth of 6 fathoms (11^m0) off the southern side of the inner Quei' reef.

Chart 8b, plan of Qosier anchorage.

Quseir anchorage.—Quseir anchorage, off the town of Quseir 5
(Lat. 26° 06' N. Long. 34° 17' E.), is practically an open anchorage and, although south-easterly winds do not blow home, a heavy swell rolls into this anchorage in bad weather.

The most conspicuous objects when approaching the anchorage are the masts, each about 120 feet (36^m6) in height, of the radio station 10
close northward of the town; the transporter on the head of the stone pier abreast the town is also conspicuous.

There are four cylindrical tanks, adjacent to the wireless masts.

Pilots.—A vessel approaching this anchorage can obtain an Arab pilot by displaying "S" flag of the International Code of Signals. 15

Jetties.—Buoys.—A jetty, with a depth of about 3 feet (0^m9) alongside its head, is situated near the condenser and south-eastward of the fort.

A stone pier is situated about half a cable eastward of this jetty.

A light railway runs to the phosphate mines inland. 20

Several buoys are moored in a semi-circle southward and westward of the transporter. Vessels cannot berth alongside but are moored to buoys close off the head of the pier, with the cantilever arm projecting over them.

Anchorage.—There is anchorage in depths of from 2 to 7 fathoms 25
(3^m7 to 12^m8) off the head of the stone pier.

In 1936, H.M.S. *Londonberry* anchored in a depth of 6 fathoms (11^m0), sand, with the southern radio mast bearing 338°, distant about 4½ cables.

There is anchorage in a depth of 12 fathoms (21^m9), soft sand, about 30
3 cables eastward of the head of the pier, with Gebel Quseir bearing about 296°.

The holding ground is reported not to be good. Should the anchorage become untenable good anchorage may be obtained at Port Safâga.

It was reported, in 1931, that the depths in this bight had much 35
decreased. The depths rapidly increase seaward.

There is open anchorage on a bank in depths of from 15 to 17 fathoms (27^m4 to 31^m1), sand and coral, about 1½ miles east-north-eastward of the head of the pier.

Chart 8b, with plan of Qosier anchorage. 40

Directions.—Gebel Gihâniya, bearing 250°, leads towards Quseir anchorage. A useful leading mark is a brown hut, with an iron chimney, which stands by itself on the coast about 2 cables southward of the town; this hut, bearing 250°, leads about one cable southward of the head of the stone pier. 45

A sailing vessel with local knowledge bound to Quseir, and not certain of the latitude should make The Brothers islets (page 119) and, with north-westerly winds, approach the coast about 8 miles northward of the anchorage; she should then keep close to the coast whilst standing southward. Care must be taken not to get southward 50
of the anchorage for vessels, making the coast a few miles southward of it, have often taken about 4 days to work back, as with north-westerly winds there is a southerly current and a heavy swell along and some distance from the coast. In the event of getting too far southward a

Charts 8b, 2523.

Chart 8b, with plan of Qosier anchorage.

vessel should stand across to the Arabian coast and make the northing there, rather than make short tacks on the Egyptian side. Should the anchorage (*Lat. 26° 06' N., Long. 34° 17' E.*) be made at night, and
 5 there be no intention of anchoring then, a vessel should not heave to, but should stand off and on, or she will drift to leeward.

Chart 8b, plan of Qosier anchorage.

Port facilities.—Fresh provisions can be obtained.

There are two hospitals, one for natives, maintained by the Govern-
 10 ment, and the other, for Europeans, privately maintained.

Quseir is connected to the general telegraph system.

Deratisation of sailing vessels can be carried out and exemption certificates can be issued to these vessels; *see* page 20.

Winds and weather.—*See* page 54.

15 **Radio.**—There is a Radio station at Quseir, *see* page 25.

Chart 8b.

Coast.—Aspect.—From Ras Hamra the coast trends about 53 miles south-south-eastward to Ras 'Erâyer (Uriah) and is fringed in places by a reef.

20 Gebel Abu Diab, 3,806 feet (1,160^m1) high, lying about 22½ miles south-westward of Gebel Abu Dob (page 170) and about 28 miles inland, is a conspicuous peak with many shoulders.

Gebel Nugrus, a red granite mountain, 4,938 feet (1,505^m1) high, is situated about 44 miles southward of Ras Hamra and 20 miles
 25 inland; Gebel Zabâra, lying about 7 miles east-south-eastward of Gebel Nugrus, is 4,465 feet (1,360^m9) high and has a cairn on its summit; Gebel Sikeit (Jebel Sikait), about 7½ miles south-eastward of Gebel Zabâra, is a rugged ridge, 2,523 feet (769^m0) high.

Off-lying dangers.—Elphinstone reef, lying about 17 miles south-
 30 eastward of Ras Hamra and about 5 miles offshore, has a depth of less than 6 feet (1^m8) over it, and is steep-to.

A bank, with depths of from 10 to 25 fathoms (18^m3 to 45^m7) over it, has some rocks with depths of less than 6 feet (1^m8) on it, and lies from about 1¼ to 3 miles offshore, 32 miles south-south-eastward of
 35 Ras Hamra.

A bank, with depths of from 7 to 20 fathoms (12^m8 to 36^m6) over it, and with a rock, with a depth of less than 6 feet (1^m8), at its northern end, lies about 3½ miles east-south-eastward of Ras Samadâi (Somadi), a promontory 36 miles south-south-eastward of Ras Hamra, and from
 40 about 3 to 4 miles offshore; another rock, with a depth of less than 6 feet (1^m8) over it, lies about 4 miles south-eastward of Ras Samadâi and 2½ miles offshore.

Several detached reefs, which are steep-to, the positions of which can best be seen on the chart, lie within 6 miles of the coast between Ras
 45 Dirra (Dhurra), a low point 7 miles south-south-eastward of Ras Samadâi, and Ras 'Erâyer, 10½ miles further south-south-eastward.

Coast.—Dangers.—Imbârak (Mubarak) inlet, on the southern side of Ras Hamra, was reported, by H.M.S. *Penzance*, in 1933, to be a less pronounced indentation than is shown on the chart; it appears
 50 to be composed of two arms, with the ruins of some houses on the shores of the southern one.

Marsa Imbârak (Mersa Má Mubârak), the northern entrance point (*Lat. 25° 30' N., Long. 34° 38' E.*) of which is situated about 1½ miles south-south-eastward of the southern entrance point of Imbârak inlet,

Charts 8b, 2523.

Chart 8b.

is a small bight, with depths of from 6 to 7 fathoms (11^m0 to 12^m8), between two reefs; in 1925, there was a conspicuous white ruin on the northern entrance point.

Marsa Abu Dibâb (Mersa Dhîba), the entrance to which is situated about 11 miles south-south-eastward of the southern entrance point of Marsa Imbârak, is a cove in the moderately level sandy coast; close southward of Marsa Abu Dibâb is an area, encumbered with reefs and rocks, with depths of less than 6 feet (1^m8) over them, which extends about 4½ miles in a north-north-easterly direction. 5 10

Ras Egela, situated about 5½ miles south-south-eastward of the southern entrance point of Marsa Abu Dibâb, rises close within to a reddish and fairly conspicuous double hill, 141 feet (43^m0) high.

Marsa Tarafi (Mersa Zebara), the entrance to which lies about 3½ miles south-south-eastward of Ras Egela, is a cove, about half a cable wide. 15

Ras Samadâi projects slightly from the coastline and is 154 feet (46^m9) high.

About 2 miles southward of Ras Samadâi there is a low point, with a reef extending 5 cables south-eastward of it; Marsa Tundeba is situated close southward of this point and reef. 20

Wadi Nakar (Ghadir) flows into the sea, about 4½ miles southward of Ras Samadâi, and at the mouth of this river is a boat harbour, called Marsa Nakari; some ruins lie on low hillocks close to the coast a short distance southward of Wadi Nakar.

From off the mouth of the Wadi Nakar a narrow reef extends about 3 miles in a south-south-easterly and southerly direction at a short distance off the coast. 25

Anchorage.—Marsa Toronbi affords anchorage in a depth of about 8 fathoms (14^m6); it is somewhat sheltered from north-westerly winds by Ras Toronbi. 30

Chart 3047, plan of Mersa Dhîba.

Marsa Abu Dibâb affords good anchorage, during westerly winds, in the centre of the cove, about 2 cables from its head, in depths of about 16 fathoms (29^m3), sand and coral; this anchorage must be approached from northward on account of the foul area close southward of the southern side of its entrance. 35

Chart 8b.

Marsa Tarafi affords completely sheltered anchorage to small vessels with local knowledge.

Anchorage may be obtained, in depths of from 10 to 18 fathoms (18^m3 to 32^m9), sheltered from north-westerly winds, on the southern side of the bank lying about 2 miles offshore, about 11 miles south-eastward of Marsa Tarafi. 40

There is anchorage off the southern side of the bank lying about 3½ miles east-south-eastward of Ras Samadâi and from about 3 to 4 miles offshore. 45

Marsa Tundeba affords anchorage to small vessels with local knowledge in depths of 10 fathoms (18^m3), close offshore.

Coast.—Aspect.—From Ras 'Erâyer (*Lat.* 24° 43' N., *Long.* 35° 05' E.) the coast trends for about 60 miles south-eastward to Ras Banâs (Benâs), is fringed in places by a reef, and is fronted in several places by islets and reefs. 50

Gebel Hamâta, situated about 30 miles southward of Gebel Sikeit and 17½ miles inland, though surrounded by other high mountains,

Chart 8b.

towers above them and is conspicuous from a great distance. See view on chart. Gebel Abu Gurdi, lying about 13 miles south-south-eastward of Gebel Hamâta and about 21 miles inland, appears from
 5 most directions like a rather flat cone surrounded by lower mountains.

Ras Banâs is the eastern extremity of a peninsula; from this cape a low sandy promontory trends $3\frac{1}{2}$ miles southward. The hills of this peninsula are sharply divided into two groups by differences of colour; white limestone hills, which attain an elevation of 617 feet (188^m1),
 10 form a narrow sinuous plateau through the length of the peninsula; the darker hills consist of a mass, 905 feet (275^m8) high, which lies near the junction of the peninsula and the coast, and another, 646 feet (196^m9) high, near its southern side, and about 6 miles from its extremity. Gezîra (Jezira) is a ridge of moderately high hills, which extend
 15 from 5 to 12 miles westward and north-westward of the cape; they slope to the low sandy ground of the eastern part of the peninsula.

Off-lying dangers.—A small reef, the northern end of which is situated about 6 miles east-south-eastward of Ras Honkorâb (Umm el Abbas), a point $10\frac{1}{2}$ miles south-south-eastward of Ras 'Erâyer, extends
 20 about $4\frac{1}{2}$ miles in a south-south-easterly direction, and has several rocks with depths of less than 6 feet (1^m8) on it; this reef lies from about $3\frac{1}{2}$ to $6\frac{1}{2}$ miles offshore. Overfalls occur between the rocks on this reef.

From about $11\frac{1}{2}$ miles east-south-eastward of Ras Qul'ân (Gulhan),
 25 a point 18 miles south-eastward of Ras Honkorâb, a chain of rocks, with depths of less than 6 feet (1^m8) over them, and which are steep-to, extends about 3 miles east-north-eastward; from within about 2 to 6 miles north-westward of this chain of rocks are several other rocks, with depths of less than 6 feet (1^m8), and the positions of which can
 30 best be seen on the chart.

Fury shoal, lying about 9 miles northward of Reef point, which is situated about 6 miles west-north-westward of the eastern extremity of Ras Banâs, and about 7 miles offshore, has depths of less than 6 feet (1^m8) over it; several detached rocks, with depths of less than 6 feet
 35 (1^m8), lie from about half a mile to $2\frac{1}{2}$ miles north-westward of this shoal.

Coast.—Islands and dangers.—A bank extends as much as $5\frac{1}{2}$ miles off the coast between Ras 'Erâyer and a position 6 miles southward; near the northern end of this bank is Sha' ab Ghadeira, on
 40 which are depths of less than 6 feet (1^m8); about one mile southward of this shoal is Gezîrat Wadi Gemâl (Wadi Jemâl island), a low rocky island; there are several other rocks with depths of less than 6 feet (1^m8) over them on this bank. The north-eastern end of Gezîrat Wadi Gemâl appears as a bluff from south-eastward, while from southward
 45 both ends of this island appear low, with the summit in the middle.

A detached rock, with a depth of less than 6 feet (1^m8) over it, lies about $4\frac{1}{2}$ miles north-north-eastward of the northern extremity of Gezîrat Wadi Gemâl (*Lat.* $24^{\circ} 40' N.$, *Long.* $35^{\circ} 09' E.$), and a similar
 50 rock about the same distance east-north-eastward of the eastern extreme of this island; the bank just described and these detached rocks are steep-to. This locality should be approached with great caution within a distance of 10 miles.

The channel between the mainland and the western side of Gezîrat Wadi Gemâl is encumbered with rocks and can only be used by small
 55 craft with local knowledge.

Chart 2523.

Charts 3047, plan of Sherm Sheikh; 8b.

Sherm Lûli (Sheikh) is a cove entered about $6\frac{1}{2}$ miles southward of Ras 'Erâyer; the coast on either side of its entrance is fringed by reefs between which there is a passage half a cable wide. The head of this cove is shallow and the shore there is low and sandy. There is a chain of hills parallel with the coast about one mile inland, which attains an elevation of 492 feet (153^m0); there is a large white patch about half-way down from the summit of a table-topped hill in this chain. *Chart 8b.*

Ras Honkorâb is low, but rises about 2 miles inland to a conspicuous sugarloaf hill, 505 feet (153^m9) high; a rock, with a depth of less than 6 feet (1^m8) over it, lies about half a mile south-eastward of this point.

Ras Qul'ân is fronted by islands and reefs; the coast for about 2 miles north-westward is fringed by a narrow reef.

Qul'ân (Gulhan) islands lie on a bank extending about 4 miles north-eastward from the coast in the vicinity of Ras Qul'ân, and thence about 8 miles north-north-westward; Gezîrat Siyûl, the northernmost of this group, is situated about 5 miles northward of Ras Qul'ân and $3\frac{3}{4}$ miles offshore; Gezîrat Showârît is the next islet south-eastward and Mahâbis (Mehabis) islets are the two southernmost islets. Several rocks, with depths of less than 6 feet (1^m8) over them, lie on this bank.

The passage between the mainland and the Qul'ân islands is encumbered with reefs.

From the promontory about 4 miles south-eastward of Ras Qul'ân a bank, with depths of from 10 to 30 fathoms (18^m3 to 54^m9) over it, extends about 7 miles south-south-eastward to the coast; a rock, with a depth of less than 6 feet (1^m8) over it, is situated on the north-eastern side of this bank, about 2 miles south-eastward of the promontory.

The entrance to Marsa Wadi Lahami (Mersa Wadi Lehama), which lies about 3 miles southward of the promontory just mentioned, is fronted by the coastal reef.

A rock, with a depth of less than 6 feet (1^m8) over it, lies about 8 miles east-south-eastward of the entrance to Marsa Wadi Lahami and three-quarters of a mile offshore.

A rock, with a depth of less than 6 feet (1^m8) over it, lies about 3 miles north-north-westward of Reef point and $1\frac{1}{4}$ miles offshore; an above-water rock lies about $2\frac{1}{4}$ miles northward of the same point, and about 2 miles south-south-eastward of this rock and one mile offshore is a rock, with a depth of less than 6 feet (1^m8); a reef, part of which is above water, lies about 4 miles eastward of Reef point and from $1\frac{1}{2}$ to $2\frac{1}{4}$ miles offshore.

Anchorage.—Small vessels with local knowledge may obtain anchorage on the bank extending southward of Gezîrat Wadi Gemâl, (Lat. $24^{\circ} 40' N.$, Long. $35^{\circ} 09' E.$), with the middle of the summit of that island bearing about 004° , in depths of from 8 to 10 fathoms (14^m6 to 18^m3), sand and rock, but care is necessary to avoid the rocks on this bank.

Chart 3047, plan of Sherm Sheikh.

Sherm Lûli affords good anchorage to small vessels with local knowledge in depths of 8 fathoms (14^m6). 50

Chart 8b.

Indifferent anchorage might be obtained by small vessels with local knowledge close inshore, on the southern side of Ras Honkorâb, with shelter from north-westerly winds, in depths of 10 fathoms (18^m3).

Chart 2523.

Chart 8b.

Anchorage may be obtained by small vessels with local knowledge southward of the Mahâbs islets, in depths of from 8 to 10 fathoms (14^m6 to 18^m3).

- 5 Marsa Wadi Lahami affords good anchorage to vessels with local knowledge in depths of about 8 fathoms (14^m6), south-eastward of the northern entrance point, and between the extremity of the reef which extends from it, and the coast.

FOUL BAY.—Aspect.—Between Ras Banâs and Abu Dâra, about 10 75 miles south-south-eastward, the coast, which is low and rocky, forms Foul bay. Port Berenice lies in the north-western corner of this bay, and southward of this anchorage the bay is encumbered with reefs and sunken rocks; the whole coast is foul and cannot be approached by a steam vessel, except at Scout anchorage, about 34 miles south-south-15 westward of Ras Banâs, but there are several anchorages used by dhows.

Gebel Batoga, situated about 22 miles westward of the southern extreme of Ras Banâs peninsula and 5 miles inland, is conspicuous on account of its light colour; it has two principal peaks, the central 20 one being 2,633 feet (801^m9) and the south-eastern one 2,582 feet (787^m0) high.

Gebel Um Etli, lying about 10 miles southward of the south-eastern peak of Gebel Batoga, has three principal peaks, the highest attaining an elevation of 2,769 feet (844^m0).

- 25 The Mountains of Berenice are a granite range with numerous peaks, lying from about 6 to 10 miles inland near the central part of Foul bay; a sandy plain extends from the base of these mountains to the coast.

There are three main masses of this range, of which the northern one is known collectively as Gebel Faraid, the central as Gebel Marafai 30 and the southern as Gebel Fereyid. The northern mass is the highest, its highest peak, about 6 miles southward of Gebel Um Etli, being 4,481 feet (1,365^m8) high; from northward it has the appearance of an open hand, the eastern peaks resembling the fingers and the western peak the thumb. About 3½ miles south-westward of the highest peak 35 of Gebel Faraid is a flat-topped mountain with steep sides, attaining an elevation of 4,130 feet (1,258^m8); about 2 miles southward of this mountain is a group of peaks, the highest, called The Bodkin, being a conspicuous sharp pinnacle, 4,042 feet (1,232^m0) high, and so narrow that it bears some resemblance to a column. South-westward of The 40 Bodkin (*Lat. 23° 30' N., Long. 35° 20' E.*), extending to a distance of about 7 miles from it are several peaks attaining elevations of from about 1,650 to 3,000 feet (502^m9 to 914^m4). Gebel Marafai, the central mass, 3,005 feet (915^m9) high, is situated about 6½ miles south-south-eastward of The Bodkin. Gebel Fereyid, is a small peaked range 45 with the two principal peaks close together, the highest of which is 2,008 feet (612^m0) high and lying about 4½ miles southward of Gebel Marafai.

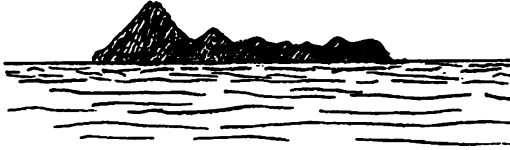
Southward of the Berenice range the coast, as far as Abu Dâra, presents no peculiar or striking features.

- 50 **Port Berenice approach.—Off-lying islands and dangers.**—**Anchorage.**—Geziret Zeberged (*see* view below), a barren waterless island, situated about 30 miles south-eastward of the south-eastern extreme of Ras Banâs, is 781 feet (238^m0) high; the hill in its centre is

Chart 2523.

Chart 8b.

a sharp conical peak of volcanic origin. Gezîret Zeberged is bordered by steep-to coral reefs, from a half to 4 cables wide, which render the island inaccessible, except for a small boat passage through the reef on the north-eastern side of the island; the summit of the island, 5 bearing 225°, leads through this passage.



Gezîret Zeberged, bearing 235°, distant 26 miles.
(Original dated 1935.)

Rocky islet, lying about 3 miles south-eastward of the south-eastern point of Gezîret Zeberged, is small, steep and rocky; in 1930, a cross stood on its summit.

Gezîret Zeberged and Rocky islet were reported, in 1942, to lie about 10 2 miles further eastward than charted.

St. John's reef, lying about 16 miles west-south-westward of Rocky islet, has a depth of less than 6 feet (1^m8) over it; several detached rocks, with depths of less than 6 feet (1^m8), lie within a distance of about 10 miles south-westward and westward of St. John's reef. 15

Mukawwa' (Mukawar) islet, lying about 3½ miles south-south-eastward of the south-eastern extreme of Ras Banâs peninsula, is 111 feet (33^m8) high at its southern end and on south-westerly bearings appears as an inclined plane; the islet is of coral and is fringed by a steep-to coral reef which extends about three-quarters of a mile north-westward 20 of its northern end.

Horseshoe reef, the northern end of which is situated about one mile south-westward of Mukawwa' islet, is awash, and extends 2½ miles south-south-eastward; it is steep-to, except on its western side, from which a bank, with depths of from 12 to 25 fathoms (21^m9 to 45^m7) 25 over it and on which are two rocks, each having a depth of less than 6 feet (1^m8), extends about 1½ miles south-westward. Small craft with local knowledge can obtain anchorage on this bank.

White rock (*Lat.* 23° 42' N., *Long.* 25° 42' E.), which is shaped like a boat and is conspicuous, lies about 9 miles south-westward of 30 Mukawwa' islet; a bank, with depths of up to 34 fathoms (62^m2) over it and on which are several rocks and shoals, with depths of less than 6 feet (1^m8), extends about 4½ miles north-eastward and 2 miles south-south-westward of White rock; a reef, with depths of less than 6 feet (1^m8), lies about 3½ miles westward of White rock. Small craft 35 with local knowledge can obtain anchorage on this bank, but it is not recommended.

A bank, with depths of from 7 to 12 fathoms (12^m8 to 21^m9) over it and on which are several rocks, with depths of less than 6 feet (1^m8), is situated about 9½ miles south-south-eastward of White rock. Small 40 craft with local knowledge can anchor on this bank.

There are some detached reefs, with depths of less than 6 feet (1^m8) over them, between this bank and White rock.

A horseshoe-shaped reef, which is charted about 14½ miles southward

Chart 2523.

Chart 8b.

of White rock but which is reported to lie 2 miles further southward, has depths of from 7 to 15 fathoms (12^m8 to 27^m4) over it, and on it are several rocks with depths of less than 6 feet (1^m8); two detached
 5 reefs, each having depths of less than 6 feet (1^m8), lie about $1\frac{1}{4}$ miles east-north-eastward and $1\frac{1}{4}$ miles westward, respectively, of this bank. Fairly good anchorage for small craft with local knowledge can be obtained close southward of this reef.

Eastern approach to Port Berenice.—**Dangers.**—The bight
 10 close westward of Ras Banâs is encumbered by reefs, which dry; close off the outer edges of these reefs there are numerous rocks and shoals, with depths of from 8 to 30 fathoms (14^m6 to 54^m9) between.

Cygnat rock, reported by H.M.S. *Cygnat*, in 1886, lies about 7 miles westward of the south-eastern extremity of Ras Banâs peninsula and
 15 one mile offshore, but its position is doubtful; it is a coral patch, with apparently a depth of less than 6 feet (1^m8) over it, and irregular depths in its vicinity. There are depths of from 9 to 21 fathoms (16^m5 to 38^m4) within about 2 miles south-westward of this rock and patches of discoloured water have been seen in this vicinity.

20 A shoal, with a depth of 2 fathoms (3^m7) over it, and which is sometimes visible, lies about $2\frac{1}{2}$ miles south-westward of Cygnat rock.

When The Bodkin is only slightly open north-eastward of the peaks of Gebel Faraid immediately northward a look-out should be kept for Cygnat rock, over which the sea does not break.

25 *Charts 3289, 8b.*

Philadelphus point, 10 feet (3^m0) high, on the southern side of Ras Banâs peninsula, about $10\frac{1}{2}$ miles west-north-westward of its south-eastern extremity, is yellow, cliffy, and somewhat indefinite, rising to a well-defined double summit, 617 feet (188^m0) high, about 9 cables
 30 northward of the point; there is a small cairn on the western summit.

There is a channel, about 2 miles wide, between Philadelphus point and the reefs and rocks extending from the coast southward of Port Berenice.

Port Berenice.—From a point on the coast about $2\frac{1}{4}$ miles north-
 35 westward of Philadelphus point (*Lat. $23^{\circ} 56' N.$, Long. $35^{\circ} 36' E.$*) a sandspit, on which there are some hummocks and sparse scrub, extends about $3\frac{1}{2}$ miles in a south-westerly direction and affords some shelter to the port from eastward. The reefs in Foul bay shelter this port from southward.

40 The inner harbour lies on the north-western side of this sandspit and is almost landlocked but, owing to the narrow and tortuous entrance channel, can only be used by small vessels with local knowledge.

A low sandy plain, with hillocks in places, rises gradually from the shores of this port to some hills about 6 miles inland.

45 *Chart 3289.*

The ruins of the ancient town of *Berenice* are situated on the western side of the port.

The best landing place is on the northern side of North cove, the entrance to which lies about $1\frac{1}{2}$ miles west-north-westward of the
 50 south-western end of the sandspit; the shore here is steep-to.

A small shelter was reported by H.M.S. *Weston*, in 1936, to be situated on a point about $3\frac{1}{2}$ cables north-eastward of the north-eastern entrance point of North cove.

Dangers.—The south-eastern side of the sandspit is bordered by

Charts 8b, 2523.

Chart 3289.

a bank, with many sunken rocks, extending to as much as 4 cables offshore ; an extensive reef extends north-westward and northward of this sandspit.

A shoal, with a depth of 34 feet (10^m4) over it, lies about one mile south-south-eastward of the south-western extremity of the sandspit.

Charts 3289, 8b.

Shoals, with depths of 2 and 4 fathoms (3^m7 and 7^m3) over them, lie about 1½ miles, respectively, southward and south-south-eastward of the same point ; southward of these shoals are numerous rocks and shoals extending to a distance of about 8 miles from the western shore of Foul bay.

Chart 3289.

In the approach to North cove are some shoals, with depths of from 2 feet to 3 fathoms (0^m6 to 5^m5) over them, the positions of which may best be seen on the chart.

In the inner harbour are numerous clearly defined coral reefs which, except when the sun is low, can easily be seen ; there are also many shoal patches.

Anchorage.—Anchorage can be obtained in depths of from 7 to 9 fathoms (12^m8 to 16^m5), sand and coral, with the south-western extremity of the sandspit bearing about 304°, distant 5½ cables.

There is extensive anchorage in depths of about 14 fathoms (25^m6), mud, sand, and coral, westward of the south-western extremity of the sandspit (*Lat. 23° 56' N., Long. 35° 31' E.*), but owing to the strong northerly winds, so prevalent during the day, there is often a troublesome sea here for boats ; a good berth is with the extremity of the sandspit bearing 103°, distant 5 cables.

Good anchorage, sheltered from northerly winds, in depths of 7 fathoms (12^m8), sand and coral, was obtained by H.M.S. *Weston*, in 1936, about 2½ cables east-south-eastward of the north-eastern entrance point of North cove.

North cove, which is about one cable wide between the reefs fringing its entrance points, affords anchorage to small vessels in depths of from 2 to 4 fathoms (3^m7 to 7^m3), sand and coral.

Charts 3289, 8b.

Directions.—The best channel for a vessel making Port Berenice is the one between the southern end of Mukawwa' islet and the north-eastern end of Horseshoe reef, and she should steer for the 617-foot (188^m0) high double summit of Philadelphus point, bearing about 304°, which leads in about mid-channel between this islet and reef ; when the southern point of Mukawwa' islet bears 090°, it should be kept astern on this bearing, which leads about one mile southward of the southern edge of the reef extending southward from the head of the bay on the western side of the south-eastern extremity of Ras Banás peninsula, until the double summit of Philadelphus point bears 321° (*see view facing page 184*), when it should be steered for on that bearing, passing about midway between Cygnet rock and the 2-fathom (3^m7) shoal 2½ miles south-westward. When Qrein el Rî, a dark detached cone-shaped hill, 390 feet (118^m9) high, situated at the foot of the hills backing the port, about 8½ miles west-north-westward of the south-western extremity of the sandspit, bears 294°, it should be steered for on that bearing ; The Bodkin will then bear about 217° and be just open of a higher shoulder northward of it.

Charts 8b, 2523.

Chart 3289.

When the double summit of Philadelphus point bears 051° a vessel should alter course westward and steer for the desired anchorage.

5 *Charts 3289, 8b.*

The above is the better channel but if it is desired to use the channel between Horseshoe reef and White rock a vessel should steer in with the summit of Gezîret Zeberged astern, bearing 113°, until White rock is abeam, and she should then steer for the double summit of Philadelphus point, bearing 321°, and proceed as previously directed.

Care is necessary to avoid confusing the hills near Philadelphus point with the more distant slopes of Gezîra ridge.

Chart 3289.

The approach to the head of the outer harbour is between the reef
15 extending north-westward and northward of the sandspit and the shoals in the approach to North cove; this channel is about 75 yards (68^m6) wide, with a least depth of 39 feet (11^m9) in the fairway. The shallowest parts of the reef extending north-westward and northward of the sandspit show when the sun is high; a vessel should keep towards
20 this reef, and it might be advisable to buoy the shoals before entering this channel in a vessel drawing more than 16 feet (4^m9).

A small vessel with local knowledge entering the inner harbour should steer a mid-channel course, in which a least depth of 17 feet (5^m2) can be carried.

25 *Chart 8b.*

Western side of Foul bay.—Islets and dangers.—Bodkin reef, over which the sea breaks, lying about 2½ miles offshore and 30 miles southward of Philadelphus point (*Lat. 23° 56' N., Long. 35° 36' E.*), dries; foul ground extends about one mile eastward and westward of
30 this reef, and a rock, with a depth of less than 6 feet (1^m8) over it, lies about half a mile east-south-eastward of it.

The coast, from westward of Bodkin reef, south-eastward to Abu Dâra, is mostly fringed by a reef and is also fronted by numerous reefs extending to as much as 18½ miles offshore; Mirear islet, Sha'ab Abu
35 Fendera and Siyâl islets lie in this foul area.

Mirear islet, situated about 19 miles south-eastward of Bodkin reef, is low and sandy.

Hassa lagoon, the entrance to which is situated about 12½ miles southward of Mirear islet, has a depth of one foot (0^m3) in its entrance
40 and of from one to 2 fathoms (1^m8 to 3^m7) within; landing can be effected at the extremity of the sandspit which forms its northern entrance point, where there is a least depth of 3 feet (0^m9) alongside. Access to the lagoon is afforded through a narrow gap in the coastal reef about 2½ miles northward of a large mangrove in the lagoon
45 entrance.

Marsa Sha'ab (*see views facing page 184*), the entrance to which is almost closed by the coastal reef and which lies about 9½ miles south-south-eastward of Hassa lagoon, is an extensive inlet; in 1925, there was a conspicuous tree in the entrance and two islets are situated close
50 southward on the coastal reef. Gimeida hill, 403 feet (122^m8) high situated about 7 miles west-south-westward of the southern entrance point of this inlet, is conical-shaped, dark and conspicuous, but care must be taken not to confuse this hill with another dark one which is flat-topped and situated about 8 miles north-westward, appearing to be

Charts 8b, 2523.

Chart 8b.

about the same distance inland and about the same elevation. In 1934, H.M.S. *Ormonde* approached with Gimeida hill bearing 224° , which leads about 9 cables southward of a detached rock, over which the sea broke occasionally and which lies about $17\frac{1}{2}$ miles north-eastward of Gimeida hill; a larger reef, which dries, lies about $1\frac{1}{2}$ miles north-north-westward of this reef, and other reefs, which also dry, about $3\frac{1}{2}$ miles west-south-westward and $5\frac{1}{2}$ miles westward. Nothing was seen of the reefs charted south-eastward of this course although light and weather conditions were favourable. 5 10

Sha'ab Abu Fendera, a rock above water, is situated about $16\frac{1}{2}$ miles north-eastward of Abu Dāra; it lies close to the eastern end of a reef which extends about $4\frac{1}{2}$ miles in a westerly direction.

Siyāl islets, lying from about 6 miles northward to 10 miles north-eastward of Abu Dāra, consist of three sandy islets partly covered with bushes; the area surrounding these islets and between them and the mainland is encumbered with reefs, and should not be approached without local knowledge. 15

Abu Dāra is a low point covered with bushes.

Chart 8b, with plan of Scout anchorage.

Anchorage.—Directions.—Scout anchorage affords good shelter to vessels with local knowledge during northerly winds, in depths of from 8 to 10 fathoms (14^m6 to 18^m3), sand, coral and shells, about 2 cables south-westward of the eastern extremity of Bodkin reef, with The Bodkin (*Lat.* $23^{\circ} 30' N.$, *Long.* $35^{\circ} 20' E.$), bearing 293° , distant 11 miles. 20 25

Chart 8b.

Good anchorage may be obtained by vessels with local knowledge on the south-western side of a group of reefs lying from about $4\frac{1}{2}$ miles to $9\frac{1}{2}$ miles northward of Mirear islet. 30

Small vessels with local knowledge may obtain good anchorage about 5 miles southward of Mirear islet, but there are numerous reefs and rocks both in its approach and in its vicinity.

H.M.S. *Ormonde* approached Hassa lagoon with the large mangrove there, bearing 282° , passing 7 cables southward of a $7\frac{1}{2}$ -fathom (14^m2) patch, and later between a spit with a depth of 6 fathoms (11^m0) over it and a detached shoal with a depth of 8 fathoms (14^m6) over it; all these shoals are visible under good conditions. Immediately after passing between the two latter shoals, and with Gimeida hill, bearing 204° , she steered 313° to an anchorage off the lagoon, with the large mangrove bearing 190° , distant 12 cables, in a depth of 22 fathoms (40^m2), coral and sand. 35 40

There is indifferent anchorage for small vessels with local knowledge outside Marsa Sha'ab.

There is anchorage in depths of from 10 to 20 fathoms (18^m3 to 36^m6) on the southern side of the reef extending westward of Sha'ab Abu Fendera, but the bottom is rocky in places. 45

Chart 8c.

ABU DĀRA TO RAS ABU SHAGARA.—Aspect.—From Abu Dāra the coast trends about $46\frac{1}{2}$ miles south-eastward to Ras Qubbat 'Īsa and thence about 10 miles further south-eastward to Ras Hadārba; the coast is mostly bordered by reefs and rocks, and reefs lie within 12 miles of it; several low islets off-lie the coast. This coast, as far 50

Chart 8c.

south-eastward as 5 miles south-eastward of Ras Qubbat 'Īsa, is inaccessible except for dhows.

Jebel Qash 'Āmir, situated about $27\frac{1}{2}$ miles south-south-eastward of 5 Abu Dāra and 13 miles inland, is an isolated mountain rising abruptly from a sandy plain, and is a mass of sharp granite spikes.

From about 5 miles south-eastward of Jebel Qash 'Āmir a range of granite mountains (*see* view on chart) extends about 30 miles in a south-south-easterly direction parallel to the coast; rising to a considerable elevation from the coastal plain it is conspicuous from a long 10 distance in clear weather but is often obscured by mist for weeks at a time, the moisture producing luxuriant vegetation right up to the summits of the mountains. Jebel 'Elba, the northern summit of this range, is a mass of light-coloured granite peaks with rugged hills of 15 darker rocks on its southern and western sides; Jebel Shendidāi, situated about $7\frac{1}{2}$ miles southward of the highest peak of Jebel 'Elba, has a conspicuous summit; Jebel Asotriba, lying about 12 miles south-south-eastward of Jebel Shendidāi, has a greenish appearance on account of its vegetation.

20 Jebel Hadārba, a small range of hills with many peaks, lying from about 5 to 9 miles west-south-westward of Ras Hadārba, attains an elevation of 1,109 feet (338^m0).

Caution.—The coastline in the vicinity of Abu Dāra (*Lat.* 22° 41' N., *Long.* 36° 06' E.) and Ras Hadārba was reported, in 1938, 25 to lie from 2 to 3 miles further eastward than charted.

Off-lying dangers.—An extensive reef, which dries in places, lies about 5 miles north-north-eastward of Ras Qubbat 'Īsa; in 1889, another reef was reported, lying about $4\frac{1}{2}$ miles north-westward of the same point and 2 miles offshore, with depths of from 3 to 4 fathoms 30 (5^m5 to 7^m3) over it, but a vessel, which passed within 5 cables of the position given, in 1932, reported that this discoloured patch appeared to have depths of from 7 to 8 fathoms (12^m8 to 14^m6) over it; pending further examination caution is necessary when approaching this neighbourhood.

35 A reef, with depths of less than 6 feet (1^m8) over it, lies about $4\frac{3}{4}$ miles east-south-eastward of Ras Qubbat 'Īsa and about $1\frac{1}{2}$ miles offshore; a similar reef lies about $2\frac{1}{2}$ miles northward of Ras Hadārba and $1\frac{1}{2}$ miles offshore.

Coast.—Islands and dangers.—Anchorage.—Ras Abu Fātima, 40 a small projecting point, is situated about 21 miles south-eastward of Abu Dāra; as mentioned above, there are some low islets on the coastal reef between Abu Dāra and Ras Abu Fātima.

About $1\frac{1}{2}$ miles southward of Ras Abu Fātima is a small inlet on the coast, with a very narrow entrance, affording well-sheltered anchorage 45 to small craft with local knowledge.

Jezirat el Dibiya (Elba island), lying about 7 miles east-south-eastward of Ras Abu Fātima and $4\frac{1}{2}$ miles offshore, is small, low, formed of coral, and is bordered by extensive reefs. Anchorage can be obtained by small vessels with local knowledge in some breaks in 50 these reefs, but numerous sunken rocks lie in their vicinity.

About 16 miles east-south-eastward of Ras Abu Fātima, two low, sandy islets, the southern called Jezirat Halaib el Kebīra and the northern Jezirat Kwolala, lie on a coral reef extending 6 miles northward of the coast; Jezirat Halaib el Kebīra is connected with the

Chart 2523.

Chart 8c.

mainland by a narrow spit of sand which dries. The channel between the southern island and the mainland is narrow and shallow; it has not been surveyed; the eastern part of this channel is called Marsa Halaib. There is a moderately high coral cliff on the coast close westward of Marsa Halaib.

Chart 14, plan of Mersa Halaib anchorages.

Marsa Halaib.—Beacons.—Marsa Halaib is sheltered by a reef extending about 5 cables southward of Sea point, the south-eastern extremity of Jezirat Halaib el Kebira, and a reef extending $3\frac{1}{2}$ miles north-westward from the mainland, about $3\frac{1}{2}$ miles south-south-eastward of Sea point; about $2\frac{3}{4}$ miles south-eastward of Sea point there is a break in this latter reef, forming a boat channel leading into the harbour, but it is intricate and encumbered with reefs and rocks. The south-western and north-western ends, respectively, of these two reefs are each marked by a beacon, consisting of a railway iron surmounted by a petrol tin, painted white; the entrance to the harbour lies between the beacons, and has a least width of 400 feet (121^m9), with a least depth of 11 fathoms (20^m1) in the fairway.

The village of Halaib (*Lat.* 22° 13' N., *Long.* 36° 39' E.) stands on the coast about $1\frac{1}{2}$ miles south-south-westward of Sea point; in the centre of this village a white fort, 21 feet (6^m4) in height, with two flagstaffs, stands on low ground, close to the coast, and close westward of this fort is the District officer's hut with a red roof. A pier of coral and stone, with a depth of 3 feet (0^m9) alongside its outer end, extends from the shore east-north-eastward of the fort to the edge of the coastal reef; this pier, in 1942, was in a poor state of repair.

Islets and dangers.—On the reef extending southward of Sea point is a sandy islet, also numerous coral boulders, which dry; a rock, 4 feet (1^m2) high, lies on the eastern edge of this reef, $2\frac{1}{2}$ cables east-south-eastward of Sea point.

North-West rock, with a depth of less than 6 feet (1^m8) over it, lies about half a cable north-north-westward of the beacon on the western side of the entrance to the harbour; a spit, on which are some rocks, with depths of less than 6 feet (1^m8), extends $2\frac{1}{2}$ cables northward of North-West rock, and a shoal, with a depth of 17 feet (5^m2), lies $3\frac{3}{4}$ cables northward of the same rock.

The shores of this harbour, except in front of the village, are bordered by reefs, which extend as much as $3\frac{1}{2}$ cables offshore, and there are many detached shoals, the positions of which can best be seen on the plan.

A beacon, consisting of a railway iron surmounted by a petrol can, painted white, stands at the eastern edge of the reef on the western side of the harbour, about one mile northward of the fort in the village.

Anchorages.—Temporary anchorage may be obtained outside the entrance to the harbour, south-eastward of the sandy islet, mentioned above, in depths of 10 fathoms (18^m3).

Within the entrance this harbour opens out northward and southward into two good anchorages, with depths of from 5 to 24 fathoms (9^m1 to 43^m9). The channel leading to the southern anchorage is $3\frac{1}{2}$ cables wide between the reef southward of North-West rock, and a reef extending about $2\frac{3}{4}$ cables north-eastward of Gable point, which point is situated $6\frac{1}{2}$ cables west-south-westward of North-West rock.

Chart 14, plan of Mersa Halaib anchorages.

In 1936, H.M.S. *Penzance* anchored in a depth of 17 fathoms (31^m1) with the fort, bearing 215°, distant 2½ cables.

Charts 14, plan of Mersa Halaib anchorages; 8c.

- 5 **Directions.—Dangers.**—A vessel making Marsa Halaib should do so with the sun in a favourable position, i.e. during the forenoon, and steer towards the extensive reef 5 miles north-north-eastward of Ras Qubbat 'Isa; this reef, over which the sea always breaks, has a few boulders on it, which dry, and can be seen from a distance of 10 several miles.

A vessel should steer towards Halaib with the fort in line with a round-topped hill (*see* view facing page 185), bearing 253°, which leads about one mile northward of this reef and 4½ cables northward of a shoal, with a least depth of 3 fathoms (5^m5) over it, lying 3½ miles 15 eastward of the fort (*Lat.* 22° 13' N., *Long.* 36° 39' E.); this course should be held until within a short distance of the reef extending south-eastward of North-West rock, when the entrance can be identified.

When close to the entrance the eye is the only guide; the reef 20 extending from Sea point, on the eastern side of the entrance, should be kept aboard, as it is more easily seen than the reef on the western side. If proceeding to the southern anchorage caution is necessary in rounding North-West rock, in order to avoid the shoals northward of it.

25 *Chart 8c.*

Coast.—Aspect.—From Ras Hadārba, which is formed of quicksands, the coast trends about 66 miles south-south-eastward to Ras Abu Shagara and is fringed by reefs.

Chart 8c, with plan of Khor Shinab.

- 30 **Jebel Abu 'Imāma** (Abu Emma), situated about 35 miles south-south-eastward of Jebel Hadārba and one mile from the coast, is a flat-topped hill (*see* view facing page 185) of a low range extending parallel to the coast and terminating about 10 miles southward in small straggling hummocks a little southward of Khōr Shin'āb; Quoin hill 35 lies close to the head of Khōr Shin'āb and there is a projection from its southern and highest edge, but this hill is sometimes difficult to identify, owing to the high land westward of it.

Chart 8c.

- Haycock, a peak about 2 miles southward of Khōr Shin'āb, is the 40 southern but one peak of the range which extends southward of Jebel Abu 'Imāma.

Jebel Shin'āb (Paps) has a notch in its summit and is situated 25 miles west-south-westward of the head of Khōr Shin'āb; it attains an elevation of 4,511 feet (1,374^m 9).

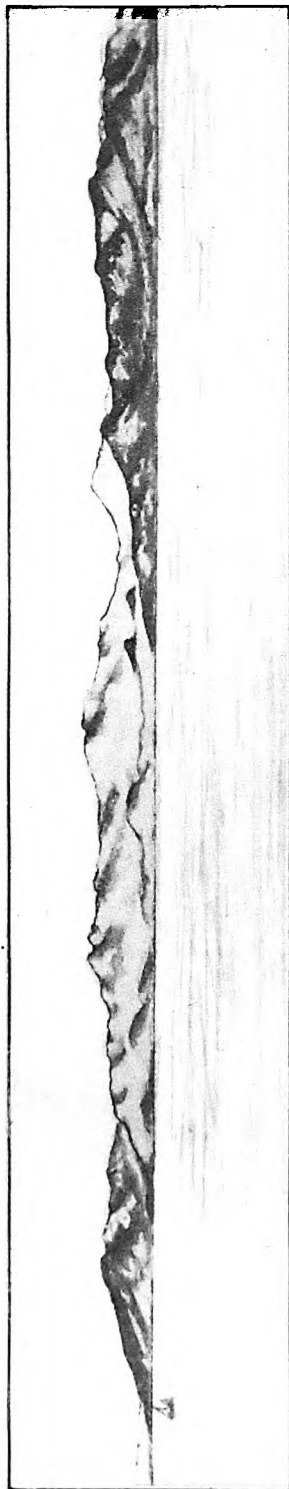
45 *Charts 3722, 8c.*

- Ras Abu Shagara is low and sandy, as is the southern extremity of the peninsula of which Ras Abu Shagara is the south-eastern point; this peninsula attains an elevation of 127 feet (38^m7) about 2½ miles south-westward of Ras Abu Shagara. A conspicuous chimney stands 50 on the western side of the peninsula, about 3 miles from its southern extremity.

From a distance north-eastward the southern part of this peninsula has the appearance of an island, but the absence of outlying islets should prevent it from being mistaken for Mukawwar (Makawwar)

Charts 8c, 2523.

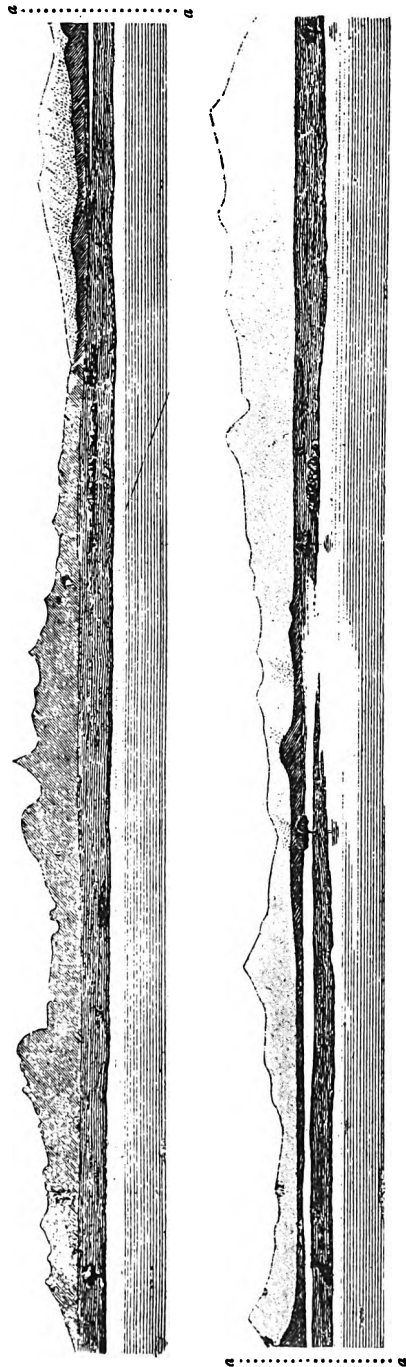
Double summit (617 ft.).



Philadelphus point.

*Cairn on double summit, bearing
321°, distant 12½ miles.*

South-eastern approach to Port Berenice.
(Original dated 1943.)



*Low black hill,
bearing 248°,
distant 8 miles.*

*Entrance to
harbour.*

View, in two parts, of the hills near Marsa Sha'ab from the entrance.
(Original dated prior to 1903.)

Round-topped hill.



Marsa Halaib fort, bearing
235°, distant 8 miles.

Eastern approach to Marsa Halaib.

(Original dated 1942.)

Jebel 'Eiba.

Two conical hills.



Jebel Abu 'Imama.

Entrance to Marsa Abu
'Imama, distant 6 miles.

Eastern approach to Marsa Abu 'Imama.

(Original dated 1933.)

Charts 3722, 8c.

island, 8 miles farther southward ; on closing the land the low coast of the peninsula will be visible from aloft.

Chart 8c.

Off-lying islet and dangers.—Anchorage.—Elba reef lies about 5
6½ miles eastward of Ras Hadārba, and has depths of less than 6 feet
(1^m8) over it ; between this reef and the coast lies a number of reefs,
amongst which anchorage can be obtained by small craft with local
knowledge, and there is a clear passage between them and the coast.

About one mile west-south-westward of the southern extremity of 10
Elba reef is a rock with a depth of less than 6 feet (1^m8) over it, and
about three-quarters of a mile south-westward of this rock is a bank
with depths of from 7 to 10 fathoms (12^m8 to 18^m3) over it.

The coast from Ras Hadārba (*Lat.* 22° 04' N., *Long.* 36° 52' E.) to
southward of Khōr Delwein (Khor Delaweb), a distance of about 15
30 miles, is fronted with reefs, some of which are several miles in
extent ; the outermost reefs are charted about 12 miles offshore, but
they are reported to lie farther southward.

Sha'ab Halaka (Shab Dhū-l lawá), lying about 6½ miles eastward of
Jebel Abu 'Imāma and 4 miles offshore, is a reef, with depths of less 20
than 6 feet (1^m8), over which the sea generally breaks ; a rock, with
a depth of less than 6 feet (1^m8) over it, lies about 1½ miles north-
westward of its western extremity.

A reef, with depths of less than 6 feet (1^m8) over it, lies about 3 miles
north-eastward of the entrance to Khōr Shin'āb, and a sunken rock 25
lies about 2½ miles farther east-north-eastward ; the sea seldom breaks
over this rock, which is difficult to see even from aloft.

Two rocks, each with a depth of less than 6 feet (1^m8) over it, lie
5 miles east-north-eastward and 6 miles eastward, respectively, of
Haycock peak, both about 2½ miles offshore. 30

An islet lies close offshore, about 4 miles eastward of the same peak.

Sha'ab Qumeira (Shab Kúmmere), the north-western end of which
lies about 4½ miles south-eastward of the islet just mentioned and one
mile offshore, has depths of less than 6 feet (1^m8) over it and on its
eastern side is a conspicuous above-water rock. 35

Two rocks, each with a depth of less than 6 feet (1^m8) over it, lie
about 2 miles east-north-eastward of Ras Abu Shagara.

Chart 3722.

From about 2 to 4 miles south-eastward and from 2½ to 5½ miles
southward of Ras Abu Shagara are several detached reefs, the positions 40
of which can best be seen on the chart.

A reef extends about 5½ miles southward of the southern extremity
of the peninsula of which Ras Abu Shagara is the south-eastern point ;
at the southern end of this reef is a rock above water.

Chart 8c.

Anchorage and inlets.—Between Ras Hadārba and Khōr Shin'āb 45
the breaks in the coastal reef give access to many inlets, most of which
afford good anchorage to small craft with local knowledge ; temporary
anchorage can also be obtained near many of the outlying reefs, where
the eye is the only guide. 50

Marsa Umbeila (Mersa Bela), which is entered about 3 miles south-
south-westward of Ras Hadārba, is a small cove, where one small vessel
with local knowledge can anchor, with a very short scope of cable ;
anchoring in a depth of 5½ fathoms (10^m1), stiff mud, the stern will

Charts 8c, 2523.

Chart 8c.

swinging into a depth of 15 feet (4^m6), coral rocks, towards the head of the cove.

- Khōr el Mar'ōb (al Máarub), about 13 miles southward of Ras Hadārba, was reported, in 1931, to be much smaller than charted, to have only one arm, to be impracticable for vessels over 200 feet (61^m0) in length, and to be 2 miles southward of its charted position.

Charts 1109, plan of Mersa Ribda; 8c.

- Marsa Gwilaib (Mersa Ribda), the entrance to which is narrow, lies about 4 miles southward of Khōr el Mar'ōb, and is fringed with reefs, which extend about 3½ cables east-south-eastward of its northern (Lat. 21° 46' N., Long. 36° 52' E.) and southern entrance points. There is anchorage for small vessels in depths of from 7 to 8 fathoms (12^m8 to 14^m6), mud and sand, about 3½ cables from the head of the cove; there is also anchorage in the northern bight, about 4½ cables within the entrance, in a depth of 10 fathoms (18^m3).

Chart 8c.

- Khōr Abu 'Asal (Khor Abu Assel), situated about 2½ miles south-south-eastward of Marsa Gwilaib, has depths of from 13 to 32 fathoms (23^m8 to 58^m5) in the entrance, decreasing to depths of 10 fathoms (18^m3) at its head, where the inlet opens out into three bights and affords swinging room for a vessel at anchor in a central position. The northern entrance point of this inlet is low and sandy, and from it the coastal reef extends to a distance of about 3 cables; the southern entrance point is a coral rock, 6 feet (1^m8) high, and off it the coastal reef extends about 3 cables.

- Marsa Masdūd, which is filled by the coastal reef, is situated about 2 miles, Marsa Hamsiat (Mersa Hamsayat) about 4 miles, and Marsa Wāsi' (Mersa Wassa), about 6½ miles south-south-eastward of Khōr Abu 'Asal.

- Marsa Abu Fanādir and Khōr Delwein are situated about 2 miles southward and 4½ miles south-south-eastward, respectively, of Marsa Wāsi'; the entrance points of these inlets are fringed with the coastal reef, but the entrances, though narrow, appear to be free from dangers. Both inlets afford anchorage with swinging room for one vessel of moderate size with local knowledge.

Charts 1109, plan of Mersa Abu Emma; 8c.

- Marsa Abu 'Imāma (Abu Emma), the entrance to which is situated about 3½ miles south-south-eastward of Khōr Delwein, is bordered by the coastal reef which extends about 4½ cables eastward of the northern and southern entrance points and is only visible in a good light; the entrance channel has a least width of one cable in the fairway.

Chart 1109, plan of Mersa Abu Emma.

- On the north-western side of this inlet is North bay, and at the head of the inlet are North-West and South-East bays; these bays are encumbered with coral reefs and have not been examined.

Middle shoal, lying in the fairway, about 5½ cables south-westward of the southern entrance point, has depths of less than 6 feet (1^m8) over it.

- The most convenient anchorage is north-north-eastward of Middle shoal, eastward of the entrance to North bay (Lat. 21° 30' N., Long. 36° 56' E.), in depths of 12 fathoms (21^m9). The inner anchorage, southward of Middle shoal, has depths of from 8 to 10 fathoms (14^m6 to 18^m3), mud and coral, good holding ground, and can be approached on either side of this shoal.

Charts 8c, 2523.

Charts 1109, plan of Mersa Abu Emma; 8c.

Jebel Abu 'Imāma is a good landmark for a vessel approaching this harbour and there are two conical hills, from about 500 to 650 feet (152^m4 to 198^m1) high, situated westward of the head of the inlet; these hills, when in line, bearing about 250°, lead towards the entrance 5 to the harbour. See view facing page 185. The northern side of the inlet should be kept aboard as far as the sandspit on the north-eastern side of the entrance to North bay, as the reefs on that side are steep-to.

Chart 8c, with plan of Khor Delwen.

Marsa Halaka (Khor Delwen), entered about 5½ miles south-eastward 10 of the entrance to Marsa Abu 'Imāma, has a least width of about 65 yards (59^m9); its shores are fringed with the coastal reef. Small vessels may obtain anchorage in this inlet but there is not swinging room until 1½ miles within the entrance.

Chart 8c, with plan of Khor Shinab.

Khōr Shin'āb, about 4½ miles south-eastward of the entrance to Marsa Halaka, is entered through a narrow gap in the coastal reef which extends about 6 cables north-eastward of the northern entrance point and 5 cables east-north-eastward of the southern one; the coastal reef on the northern side of the entrance is more easily seen 20 than that on the southern side as some parts of it are above water. The inlet terminates in three small bights; the shores of the inlet are fringed with reefs, and the fairway has a least width of about half a cable.

A shoal, with a depth of 2 fathoms (3^m7) over it, and a reef, which 25 dries, lie in the entrances to the northern and southern bights, respectively.

The best anchorage appears to be well up the inlet.

A vessel should approach Khōr Shin'āb when the sun is in the east, as when it is in the west the reefs ahead are scarcely discernible. Quoin 30 hill in line with Jebel Shin'āb, bearing 259°, leads from seaward to the entrance, passing between the reefs on either hand.

Charts 3722, 8c.

Dungunab bay.—Dungunab bay lies between the mainland, on the west, and the peninsula, of which Ras Abu Shagara is the south- 35 eastern point, on the east; the entrance to this bay is encumbered with islets and dangers.

Chart 3722.

Abu Gosha, an above-water rock, covered with bushes, lies on a reef about 3 miles south-westward of the southern extremity of the penin- 40 sula and about 3½ cables eastward of the western edge of this reef.

Sararat, an islet, situated 1½ miles west-south-westward of Abu Gosha, lies on a reef which extends about one mile east-north-eastward of it; a line of reefs and low islets extends about 3½ miles south-eastward of this islet, and a chain of reefs and rocks extends from Sararat 45 westward to the coast. Sararat and Bathing islet (*Lat.* 20° 56' N., *Long.* 37° 12' E.) about 1½ miles south-eastward, are covered with low thick shrubs.

Anchorage.—Directions.—Dungunab bay affords good anchorage in depths of from 7 to 22 fathoms (12^m8 to 40^m2). 50

The southern extremity of the reef extending southward of the southern extremity of the peninsula on the eastern side of the bay can be identified by two small rocks, each about 3 feet (0^m9) high and half a cable apart, the outer of which may be rounded close to.

Charts 8c, 2523.

Chart 3722.

The track from about 2 miles south-south-eastward of Ras Abu Shagara to these rocks, passing between the reefs south-eastward and southward of this cape, as taken by H.M.S. *Weston*, in 1936, is indicated by a pecked line on the chart; this channel is intricate and H.M.S. *Weston* reported that it should only be used when the light conditions are favourable.

After rounding these two small rocks a vessel, bound for an anchorage in Dungunab bay, should steer north-westward towards the entrance to the bay; this channel has depths of from 6 to 8 fathoms (11^m0 to 14^m6) in it, but care must be taken to avoid a sunken rock lying on the north-eastern side of the fairway, about 1½ miles north-westward of the 3-foot (0^m9) high rocks, also a reef on the south-western side of the fairway, about one mile eastward of the eastern extremity of Sararat.

The entrance channel, between the reef east-north-eastward of Sararat and that westward of Abu Gosha, has a depth of 2½ fathoms (4^m6) in it. This channel should not be attempted by vessels of more than 12 feet (3^m7) draught.

There is reported to be a passage, with depths of from 1½ to 2 fathoms (2^m7 to 3^m7) in it, through the reefs westward of Sararat.

Chart 3722, with plan of Muhammad Qöl.

MUHAMMAD QÖL AND APPROACHES.—The village of Muhammad Qöl, consisting chiefly of Arab huts, lies on the north-western shore of a bight, about 3 miles south-westward of the western extremity of Sararat; there is a conspicuous fort in this village, also a custom house. There is a jetty in front of the village.

Charts 3722, 8c.

Aspect.—A range, the northern extremity of which lies about 24 miles south-south-eastward of Jebel Shin'āb and 12 miles inland, extends about 34 miles southward, attains an elevation in Jebel Erba (Tariba), about 12 miles from its northern extremity, of 7,273 feet (2,216^m8) high, and is a good landmark; on the northern part of this range are two small rugged peaks, the northern of which is visible from a great extent of coast. There is a small peak with a flat summit close northward of Jebel Erba; it is not charted. See views on chart 8c.

Between Jebel Erba and the coast is a peak, named the Sugarloaf, but it is not charted.

Chart 8c.

Jebel Melangweib (Chimney hill), lying about 16 miles southward of Jebel Erba, attains an elevation of 5,459 feet (1,663^m9) and has some resemblance to a chimney. Jebel Oda (False Chimney hill), about 11½ miles south-westward of Jebel Melangweib, is 7,411 feet (2,258^m9) high and when seen from off Marsa Salak its summit is just visible above the northern edge of a dip in Jebel Saghûm (Table mountain), which is situated about 16½ miles east-south-eastward of Jebel Melangweib (*Lat.* 20° 29' N., *Long.* 36° 48' E.) and is round and elongated; from off Marsa Arakiyai (Mersa Ar-rakiyai) and Marsa Aweitir (Awa Tiri), about 13½ and 16½ miles southward, respectively, of Marsa Salak, it has the appearance of a sugarloaf with a sharp peak, while off Port Sudan it appears to have a rugged peak. See views on chart.

Jebel Gumaderiba (Gomadliba), 16 miles southward of Jebel Oda, is 6,171 feet (1,880^m9) high; its summit is a sharp rocky peak, the

Charts 8c, 2523.

Chart 8c.

appearance of which does not alter much from seaward, though there is a shoulder on its southern side. See view on chart 8c.

Chart 3722.

Dabādīb, a hill about $15\frac{1}{2}$ miles southward of Muhammad Qŭl and about $4\frac{1}{2}$ miles inland, is a good landmark ; it lies at the southern end of a range of hills which extends parallel to the coast to a short distance northward of Muhammad Qŭl.

Between this range and the coast is a sandy plain, with some scrub in places, rising gradually to an elevation of about 100 feet (30^m5) at the foot of the hills.

See also pages 184-185.

Islands and dangers in approaches.—Light.—Beacons.—

Between Rās Abu Shagara and the Mayetib islets, about $15\frac{1}{2}$ miles southward, is a chain of reefs, with deep narrow channels between them ; some of these reefs are remarked on on page 185.

Abington reef is of coral and is above water ; it lies about $12\frac{1}{2}$ miles south-eastward of Ras Abu Shagara, and is the outer reef in this locality ; Angarosh (Umm el Kurush), a sandy islet, is conspicuous, and is situated on a reef about 2 miles south-south-westward of Abington reef ; another reef lies about $1\frac{1}{2}$ miles south-westward of Angarosh.

Shambaya (Shab Baraya), a sandy islet about $2\frac{3}{4}$ miles westward of Angarosh, lies near the south-eastern end of a reef extending about 3 miles north-westward ; close north-eastward of this reef, and separated from it by a channel about $1\frac{1}{2}$ cables wide, is another reef which extends parallel to it for about $3\frac{1}{2}$ miles. The south-eastern entrance to the channel between the reefs is marked by two beacons on each side, those on the north-eastern side being painted red and surmounted by a drum and those on the south-western side painted white, the northern one only being surmounted by a drum.

A light is exhibited, at an elevation of 97 feet (29^m6), from a dark brown iron framework tower on a concrete base, situated on a reef about 5 cables northward of Shambaya.

About three-quarters of a mile north-westward of the two reefs described above is an extensive coral reef, the extent of which has not been determined ; there is a deep channel between these reefs, except at the southern end where they are nearly joined together.

Qita' el Bannā, situated about 10 miles southward of Shambaya, is a reef, which dries 2 feet (0^m6), and is steep-to.

Mayetib islets consist of two islets lying on the eastern side of an extensive reef ; the southern islet, which is the larger and higher of the two, is covered with small trees and shrubs, while its south-eastern side is barren and precipitous.

Near the northern end of the channel separating the eastern side of Mukawwar island from the reef on which the Mayetib islets (*Lat.* $20^{\circ} 47' N.$, *Long.* $37^{\circ} 20' E.$) lie are two patches of reef ; a rocky patch, which dries 2 feet (0^m6) and is marked by a beacon, surmounted by a cone, 14 feet (4^m3) in height, lies about $2\frac{1}{2}$ miles south-westward of the southern Mayetib islet, and a rock awash and a shoal, with a depth of $1\frac{1}{2}$ fathoms (2^m7) over it, lie about 2 and $3\frac{1}{2}$ cables northward, respectively, of this beacon.

Mukawwar island is a tableland of rocky sandstone with steep cliffs apparently worn away by heavy rain ; it has a sterile appearance there being only rocks and barren sands on it except at its southern end

Chart 3722.

where there are some mangroves; the southern extremity of the island is a very low sandy spit. The island is bordered by a coral reef, the northern part of which is apparently extensive but has not
 5 been examined; at the north-western end of it lies Gad Mesharifa, an islet 4 feet (1^m2) high; a rocky spit extends about one mile south-south-westward of the southern extremity of Mukawwar island, and is marked at its southern end by a beacon, surmounted by a cylinder, 14 feet (4^m3) in height; a sandy patch, which sometimes dries, lies
 10 about 1½ cables northward of this beacon.

The fairway between Gad Mesharifa and Mesharifa, another islet 6½ cables north-north-westward, is about 2½ cables wide.

Merlin rock, situated about 2½ miles east-south-eastward of the southern extremity of Mukawwar island, has a depth of less than
 15 6 feet (1^m8) over it; Falcon reefs, lying about one mile south-westward of Merlin rock, is a narrow chain consisting of some detached patches with depths of less than 6 feet (1^m8).

Foul ground lies between Falcon reefs and the Tiflah islets (Jezair Dabadib).

20 Charts 3722, 8c.

Tiflah islets, about 6½ miles southward of the southern extremity of Mukawwar island, lie from about three-quarters of a mile to 2 miles offshore; both islets have bushes on them. They are surrounded by reefs and sunken rocks, over which the sea sometimes breaks; the
 25 two outer reefs, with depths of less than 6 feet (1^m8) over them, lie about 6 miles east-south-eastward and south-south-eastward, respectively, of the eastern islet.

The channel between the mainland and the Tiflah islets has depths of from 5 to 7 fathoms (9^m1 to 12^m8) in it, and affords a sheltered
 30 passage for small vessels with local knowledge.

Chart 3722.

Powell rock, situated about 2½ miles south-south-westward of the southern extremity of Mukawwar island, has a depth of 1½ fathoms (2^m7) over it; between Powell and Merlin rocks and between Powell
 35 rock and Falcon reefs are some shoals, the positions of which can best be seen on the chart.

Brandon rock, lying about 3 miles west-north-westward of the southern extremity of Mukawwar island, consists of two detached patches, with depths of 2 and 3 fathoms (3^m7 and 5^m5) over them,
 40 respectively; the sea sometimes breaks over this rock.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies about 1½ miles west-south-westward of the western end of Gad Mesharifa.

Currents.—Strong westerly currents have been experienced in the vicinity of Abington reef (*Lat.* 20° 54' N., *Long.* 37° 27' E.).

45 Chart 3722, plan of Muhammad Qöl.

Dangers in entrance to Muhammad Qöl.—Beacons.—The outer dangers on the northern side of the entrance to the anchorage off Muhammad Qöl consist of a shoal, with a depth of 2½ fathoms (4^m1) over it, a rock awash, a shoal, with a depth of 4½ fathoms (8^m2), and
 50 a reef, with depths of less than 6 feet (1^m8), lying about 1½ miles, one mile, 8½ and 7½ cables, respectively, east-north-eastward of the fort in the village; westward and north-westward of the reef just mentioned are many other shoals, the positions of which may best be seen on the plan.

Charts 3722, 8c, 2523.

Chart 3722, plan of Muhammad Qol.

Two stone beacons, each 6 feet (1^m8) in height, are situated on reefs, which dry, one on each side of the channel, about 4½ cables eastward and 6½ cables east-south-eastward, respectively, of the fort; two small iron beacons stand about 3½ and 4½ cables, respectively, east-south-eastward of the fort. 5

In addition to the dangers described above several shoals and reefs lie on either side of the channel leading to the anchorage off Muhammad QŌl; the positions of these dangers may best be seen on the chart. *Chart 3722.* 10

Anchorage.—Dangers.—In 1938, H.M.S. *Weston* anchored in depths of from 3½ to 5 fathoms (5^m9 to 9^m1), between the two reefs, about 1½ miles north-westward of Shambaya.

Anchorage may be obtained by small vessels in a depth of 12 fathoms (21^m9), mud, with the southern extremity of Mukawwar island bearing 15 302°, distant about one mile; anchorage may also be obtained off the western side of this island in suitable depths.

Anchorage, sheltered from both northerly and southerly winds, may be obtained by vessels with local knowledge close inside the point of reef extending north-westward from the Tiflah islets, about 1½ miles 20 northward of these islands, in depths of from 5 to 14 fathoms (9^m1 to 25^m6).

Chart 3722, with plan of Khor Inkeifail.

Inkeifail (Inkeifail), the entrance to which is through a break in the coastal reef about 5 miles west-north-westward of the southern extrem- 25 ity of Mukawwar island, is a small inlet, the head of which dries; the shores of this inlet are fringed by reefs. Good anchorage may be obtained here by small vessels with local knowledge.

Chart 3722.

Rawāya anchorage lies southward of the chain of reefs and rocks 30 extending westward from Sararat to the coast and westward of the line of reefs and islets extending south-eastward from that islet. It is well sheltered, but a shoal, with a least depth of 2½ fathoms (4^m6) over it, lies about 8 cables west-south-westward of Bathing islet; other shoals, with a least depth of 3 fathoms (5^m5), the positions of which 35 may best be seen on the chart, lie on the northern and eastern sides of this anchorage, and shoals extend to as much as one mile from the western shore. A good berth is in a depth of 7 fathoms (12^m8), sand, good holding ground, with Muhammad QŌl fort bearing 251° and Gad Mesharifa (*Lat.* 20° 54' N., *Long.* 37° 14' E.) bearing 124°. 40

Chart 3722, plan of Muhammad Qol.

There is anchorage in a depth of 6½ fathoms' (12^m3) about 2 cables south-eastward of the head of Muhammad QŌl jetty; H.M.S. *Penzance* reported, in 1933, that, owing to the restricted swinging room, this anchorage is unsuitable for a prolonged stay. 45

Chart 3722.

Directions.—Vessels bound to any of the anchorages within Mukawwar island may approach by several channels, but those northward of this island are only available for small vessels with local knowledge. The best of these channels is that between Mesharifa and Gad Mesha- 50 rifa; the track leading from northward to this channel is indicated by a pecked line on the chart and, as stated on page 188, is intricate and should only be used when the conditions of light are favourable.

The northern edge of the reef extending eastward from Gad Mesha-

Chart 3722.

rifa is less broken and more easily identified than the patches on the northern side of the channel, eastward of Mesharifa. A vessel should keep in mid-channel between these two islets and, when south-westward of the bank extending about 3 cables west-south-westward of Mesharifa, shape course for the desired anchorage.

Chart 3722, with plan of Muhammad Qol.

A vessel bound for the anchorage off Muhammad Qŏl should, after passing through the channel between Mesharifa and Gad Mesharifa, steer a west-north-westerly course for the entrance to this anchorage. The approach, indicated by a pecked line on the plan, is narrow, winding, and intricate, but by careful sounding a small and handy vessel can proceed, in a least depth of $4\frac{1}{2}$ fathoms (8^m2), to the anchorage.

Chart 3722.

The southern and principal approach to these anchorages should be taken by vessels of moderate draught only, as the depths are irregular.

A vessel should approach with the shoulder at the southern end of the high land of Mukawwar island bearing 258° until Angarosh bears 348° , distant $3\frac{1}{2}$ miles; she should then steer 245° for Dabādib summit, which leads between the dangers on either side.

The sandy patch, lying $1\frac{1}{2}$ cables northward of the beacon marking the southern end of the rocky spit extending one mile south-south-westward of the southern extremity of Mukawwar island (*Lat.* $20^\circ 49' N.$, *Long.* $37^\circ 16' E.$) usually shows well with the sun behind the observer, and should be rounded at a distance of about one mile.

When the western extremity of Mukawwar island bears 006° a vessel can steer northward to pass about one mile eastward of Brandon rock; care must be taken to avoid the 3-fathom (5^m5) patch, lying $1\frac{1}{2}$ miles west-south-westward of the western end of Gad Mesharifa.

30 Charts 3722, 8c.

INNER CHANNEL.—Aspect.—Islands and dangers.—Beacon.—Directions.—The Inner channel, between the coastal reef and the outlying dangers, is remarked on on page 164.

The aspect of the coast between Ras Abu Shagara and Marsa Salak, 36 miles southward, is described on pages 188–189.

The islands and dangers as far southward as the reef 6 miles south-south-eastward of the eastern Tiflah islet are described on pages 189–190; the coast is mostly fringed by reefs.

Chart 3722.

The channel leading from seaward through the outlying dangers to this part of the Inner channel is described above.

Little Inkeifal (Little Khor Inkeifail), the entrance to which is situated about 2 miles southward of the entrance to Inkeifal, has not been examined.

45 Chart 8c.

Marsa Salak, the eastern entrance point of which is formed by a sandspit bordered by the coastal reef, is a small and almost land-locked bight. Some rocks, with depths of less than 6 feet (1^m8) over them, lie within about 2 miles eastward and east-south-eastward of the extremity of this sandspit; of these rocks, one, lying about one mile east-south-eastward, is marked by an iron beacon, surmounted by a triangle, base upwards, and painted red. Vessels passing up and down the coast should always pass close westward of this beacon. There is

Charts 8c, 2523.

Chart 8c.

also a rock, with a depth of less than 6 feet (1^m8), lying about 5 miles eastward of the sandspit.

Charts 3722, 8c.

The directions for a vessel using the Inner channel south-eastward of the Abu Shagara peninsula are given on pages 188 and 191; the directions given on page 192 for a vessel passing westward of Mukawwar island should be reversed.

The Inner channel southward of Marsa Salak is continued below.

Chart 8c.

Anchorage.—Directions.—Marsa Salak affords anchorage to vessels with local knowledge in depths of about 9 fathoms (16^m5), mud, but the anchorage is encumbered with sunken rocks, and there is probably not much shelter against southerly winds.

Vessels bound for Marsa Salak should pass between the coastal reef and the beacon described above; the channel here is about 3 cables wide with a least known depth of 6 fathoms (11^m0). After passing westward of this beacon a vessel should pass close round the extremity of the sandspit, between it and some sunken rocks southward, the discoloured water over which can be seen in clear weather; the entrance is intricate and the eye is the only guide.

Marsa Salak to Port Sudan (continued from above). **Aspect.**—The Inner channel southward from Marsa Salak, between the coastal reef and the outlying dangers, is, about half a mile south-eastward of the sandspit (page 192), only 2 cables wide; about 3 miles farther southward it is wider. There are depths of from 14 to 24 fathoms (25^m6 to 43^m9) in the narrow part of the channel, which is generally deep elsewhere. This Inner channel is useful to small coasting craft as it affords smooth water, but the eye is the only guide to its navigation.

In cloudy weather it is sometimes difficult to discern sunken rocks and patches; it is then advisable to anchor at Marsa Salak (*Lat.* 20° 27' N., *Long.* 37° 10' E.) or at some anchorage near the reefs, until the weather clears.

From a position about 22 miles southward of the sandspit, mentioned above, the coast is fronted by a chain of reefs, leaving a clear inner channel, about 2 miles wide, between them and the coastal reef, leading to Port Sudan, a distance of about 27 miles; the track through this part of the Inner channel is indicated by a pecked line on the chart.

The aspect of the coast between Marsa Salak and Marsa Fijja, about 23 miles southward, is described on page 188.

The land in the vicinity of the coast near Marsa Fijja is about 2 or 3 feet (0^m6 or 0^m9) high, with some bare coral ridges from about 6 to 8 feet (1^m8 to 2^m4) high, and so continues southward beyond Marsa Darūr, about 12 miles south-south-eastward. Farther inland there is a flat sandy plain with a few scattered bushes, and several small plateaux from 10 to 20 feet (3^m0 to 6^m1) high; it is from 10 to 20 miles wide and rises gradually towards the base of the mountains; in winter this plain is thickly covered with tussock grass about 3 feet (0^m9) high.

About 7 miles inland a group of sandy barren hillocks rise to an elevation of about 300 feet (91^m4) above the level of the plain. The lower hills of the mountains of the interior begin abruptly south-

Chart 2523.

Chart 8c.

westward of these hillocks, and extend southward and westward. The angle thus formed is marked by a mountain, 1,137 feet (346^m6) high, situated about 9 miles west-south-westward of Marsa Fijja, whose summit from the direction of this inlet appears as a sharp cone, but from farther southward as a rounded ridge; a valley extends from this mountain 18 miles westward to Jebel Gumaderiba.

Chart 81.

The coast and land which backs it, between Marsa Darūr and Port Sudan is a low flat plain extending about 11 miles inland to the base of the mountains; the country is barren, shrubs and other vegetation being scanty.

Charts 81, 8c.

Jebel Bawāti is a range extending some 16 miles south-south-eastward from Jebel Gumaderiba, with six summits, of which five are between 5,000 and 6,000 feet (1,524^m0 and 1,828^m8) high. Southward of Jebel Bawāti, the ranges decrease in elevation until westward of Port Sudan, where a peak of Jebel Asoteriba (Sotriba), rises to an elevation of 4,478 feet (1,364^m9) in a not very well-defined summit, and is a good mark when not obscured by clouds. See view on chart No. 81.

On the lower ranges nearer the coast, the next southward of the unnamed hill, 1,137 feet (346^m6) high, mentioned above, is Jebel Tagwiai, the two summits of which are each about 1,200 feet (365^m8) high, and have nearly the same appearance from all directions except when in line bearing 257°.

Jebel Danai To Eira (Deani), 2,365 feet (720^m8) high, 4 miles west-south-westward of Jebel Tagwiai, and Jebel Heiranu (Adalueb peak), 2,234 feet (680^m9) high, 5 miles southward of Jebel Danai To Eira, are conspicuous, as is a long hog-backed range, 2,431 feet (741^m0) high, trending southward and eastward, which from Port Sudan (*Lat.* 19° 36' N., *Long.* 37° 14' E.) shows as a single peak.

Chart 8c.

Outlying dangers.—Beacons.—Light.—Fog signal.—Sha'ab Rūmi, lying about 22 miles north-north-eastward of the north-eastern entrance point of Port Sudan, has depths of less than 6 feet (1^m8) over it, is steep-to, and is marked at its southern end by a red iron framework beacon, surmounted by a disc painted in black and white chequers, 14 feet (4^m3) in height; this reef is always visible, and the sea generally breaks over its outer edge.

Charts 81, with plan of Sanganeb anchorages; 8c.

Sanganeb reef (see view on chart 81), the northern extremity of which is situated about 9 miles southward of Sha'ab Rūmi beacon, extends 3½ miles southward, and is marked at its northern end by a framework beacon, surmounted by a white ball, 24 feet (7^m3) in height, and at its north-western end by a concrete beacon, surmounted by a "T", 13 feet (4^m0) in height, situated about 6 cables south-westward of the northern beacon; a light-tower is situated on the southern extremity of this reef. Sanganeb reef, which is steep-to, is an atoll, over which the sea generally breaks, with an opening on its western side.

Chart 81, with plan of Sanganeb anchorages.

A light is exhibited, at an elevation of 165 feet (50^m3), from a brown framework tower, with a white lantern and a white dwelling, on a

Charts 8c, 2523.

Chart 81, with plan of Sanganeb anchorages.

masonry base, 180 feet (54^m9) in height, situated on the southern extremity of Sanganeb reef.

A fog signal is sounded from this lighthouse.

Anchorage.—Directions.—Beacons.—There is anchorage in 5 depths of 25 fathoms (45^m7), white clay mud, in the lagoon enclosed by Sanganeb reef. A vessel should steer eastward towards the opening in the western side of this reef, which is about 2 cables wide, and lies about three-quarters of a mile northward of its south-western extremity ; this channel is marked on its southern side by a beacon consisting 10 of a rail surmounted by a drum. Having passed about three-quarters of a cable northward of the reef on the southern side of the entrance, which shows clearly, and after crossing a narrow ridge, with depths of from 5 to 8 fathoms (9^m1 to 14^m6) over it, a vessel should anchor in the middle of the lagoon. The track is indicated by a pecked line on the 15 plan.

An inner lagoon lies southward of the main lagoon and is separated from it by a reef, in the eastern part of which there is a channel, with a depth of 4½ fathoms (8^m2), marked on its eastern side by a beacon consisting of an iron standard, 6 feet (1^m8) in height, surmounted by 20 a black and white drum, and on its western side by a similar beacon surmounted by a red drum. There is anchorage in depths of from 10 to 12 fathoms (18^m3 to 21^m9) in the middle of the inner lagoon, on the eastern side of which stands a beacon, surmounted by a drum.

Chart 8c.

Channels from seaward to Inner channel.—Between the southern 25 extremity of Sha'ab Su'adi, 19 miles south-south-eastward of the eastern entrance point of Marsa Salak (*Lat.* 20° 27' N., *Long.* 37° 10' E.), and the northern extremity of the reef lying about 5 miles southward, there is a channel leading from seaward to the Inner 30 channel ; care must be taken to avoid the rock awash 3 miles southward of the southern extremity of Sha'ab Su'adi.

A vessel bound for either Marsa Arakiyai or Marsa Aweitir should pass southward of Sha'ab Su'adi, on the southern end of which there are some rocks above water, and thence, to avoid the detached rocks 35 on the inner side of that reef, keep the coastal reef aboard until eastward of the entrance to the desired anchorage.

Or she should pass through the opening between Sha'ab Su'adi and the reef northward of it, leaving two small patches to northward, with the southern extremity of the coral islet in the entrance to Marsa 40 Arakiyai in line with Jebel Gumaderiba, bearing 255° ; this track is frequently used by native craft trading between Marsa Arakiyai and Jidda, but it is not considered safe for other than small craft with local knowledge.

Charts 3492, 81.

The best approach from seaward for vessels bound for Port Sudan is 45 southward of Sanganeb reef ; coming from eastward, the best time to make Sanganeb reef is just before dawn, as the light-tower is difficult to pick up with the afternoon sun, and, at times, no landmarks are visible.

A vessel should steer to pass about 2 miles south-eastward of Sanganeb reef light-tower, as indicated by a pecked line on chart 81, and 50 when about 2 miles east-south-eastward of the light-structure marking the south-western extremity of Wingate reefs she should alter course

Charts 8c, 2523.

Charts 3942, 81.

westward into the Inner channel and steer for the entrance to Port Sudan where pilots await vessels.

Chart 8c.

- 5 **Coast.—Dangers.—Beacons.—Light.—Directions.** — Between Marsa Salak and Marsa Arakiyai the coastal reef extends to a distance of about one mile offshore.

From a position about 3 miles eastward of the sandspit at Marsa Salak a chain of reefs extends about 18 miles southward to the southern
10 end of Sha'ab Su'ādi; several detached reefs, the positions of which can best be seen on the chart, lie within 2 miles on each side of this chain.

About 5½ miles south-south-eastward of the sandspit at Marsa Salak are three shoals, each with depths of less than 6 feet (1^m8) over them,
15 lying close together and about 1½ miles offshore; they show up well under good conditions, one or two coral heads usually being visible, and they can be passed on either hand.

Off the entrance to Marsa Arakiyai are two detached rocks, one on either side, each having a depth of less than 6 feet (1^m8) over it.

- 20 *Chart 8c, plan of Mersa Ar-Rakiyai.*

Marsa Arakiyai (Mersa Ar-rakiyai) is a landlocked cove fringed with reefs, with a coral islet lying on the reef on the southern side of the entrance, which reduces its navigable width, northward of this islet, to about 30 yards (27^m4); there are depths of from 6 to 8 fathoms
25 (11^m0 to 14^m6) both in the entrance and in the cove but, so many coral heads rise to near the surface, it is only available for dhows or small boats.

Chart 8c.

Between Marsa Arakiyai (*Lat. 20° 12' N., Long. 37° 10' E.*) and
30 Marsa Aweitir, about 3 miles southward, the coastal reef extends to as much as half a mile offshore and there are some sunken rocks near its edge, which is steep-to.

Marsa Aweitir (Awi Tiri) is a gap in the coastal reef, 3 cables wide and about the same length, with depths of 26 fathoms (45^m7), mud, in
35 mid-channel, decreasing to depths of 8 fathoms (14^m6) close to the reefs. A small stream flows into the head of this cove, which makes it a favourite anchorage for native craft.

Dāra (Darra) lagoon is about 2 miles southward of Marsa Aweitir; there are some saltworks and a jetty at Dāra.

- 40 About 3 miles southward of the southern extremity of Sha'ab Su'ādi is a detached rock awash.

From about 5 miles southward of the southern extremity of Sha'ab Su'ādi an area encumbered with reefs and shoals extends for about 11 miles approximately parallel to the coast; its eastern edge shows
45 clearly and is a practically continuous narrow reef, partly awash and partly covered, whilst its western edge is not so clearly defined and is broken up into many small reefs, some not visible; at the northern and southern ends of this area there are several small steep-to coral heads. The area has not been surveyed but it appears to be full of
50 dangers, over which the sea breaks.

Charts 205, plan of Mersa Fijāb; 8c.

Marsa Fijja (Mersa Fijāb), which lies about 5 miles southward of the jetty at Dāra, is entered through a break in the coastal reef, southward of a narrow peninsula extending south-south-westward from the

Charts 8c, 2523.

Charts 205, plan of Mersa Fijāb ; 8c.

head of this inlet ; this peninsula is bordered by reefs extending to a distance of about $4\frac{1}{2}$ cables from its eastern and southern sides. The entrance is half a cable wide and lies southward of an islet situated at the edge of the coastal reef extending south-south-westward of the extremity of the peninsula. This inlet decreases in width northward to a muddy creek at its head ; it is encumbered with reefs and shoals on which are many islets. The anchorage space is limited, and suitable for very small vessels only.

Marsa 'Arūs, the entrance to which is about half a cable wide and is situated about $1\frac{1}{2}$ miles southward of the entrance to Marsa Fijja, is only available for boats ; Khōr Agwatiri (Gaweteri) flows into the head of this inlet, and at times discharges heavy flood water. Wehemehi tower, ancient, square-topped, about 15 feet (4^m6) in height, and visible from seaward, stands about $2\frac{1}{2}$ miles south-westward of the head of this inlet.

Between the entrance to Marsa Fijja and the entrance to Marsa 'Arūs the coastal reef extends to as much as $5\frac{3}{4}$ cables offshore, and there are many rocks and shoals lying within about $3\frac{1}{2}$ cables of the edge of this reef. The coastal reef extends about $5\frac{1}{2}$ cables east-north-eastward of the southern entrance point of Marsa 'Arūs, and the edge of the reef then trends southward parallel to the coast ; a rock, with a depth of 8 feet (2^m4) over it, lies in the approach to the latter inlet about $1\frac{3}{4}$ cables north-eastward of the north-eastern extremity of this reef, and several patches of reef lie from 2 to 5 cables southward of this rock, and a cable eastward of the coastal reef.

Chart 8c.

Between the southern entrance point of Marsa 'Arūs (*Lat.* $20^{\circ} 00' N.$, *Long.* $37^{\circ} 10' E.$) and the entrance to Marsa Darūr, about 10 miles south-south-eastward, the coast is fringed by a reef, with sunken rocks in places eastward of its edge and extending to within about 5 cables of the fairway of the Inner channel.

Charts 205, plan of Mersa Darur ; 8c.

Marsa Darūr is entered through a break in the coast reef, about three-quarters of a cable wide ; it is at the mouth of the largest valley in this region, which is formed by the junction, about 3 miles inland, of the Arba'āt and Darūr valleys. This inlet lies between the coastal reef and a sandbank, northward, and three flat islets, covered with bushes, south-eastward, southward, and westward ; the winter freshets bring down quantities of mud and sand from the mountains, so that the head of the harbour is silting up.

About $2\frac{3}{4}$ cables eastward of the eastern islet, and close southward of the entrance, lies a detached reef, which dries in places, and the sea nearly always breaks over it ; there is a clear channel, about one cable wide, between it and the coastal reef westward.

A stone pier, which was in ruins, in 1904, affords landing for boats at the north-eastern extremity of the western islet which was then connected with the mainland by a stone causeway.

Charts 81, 8c.

From a position about $4\frac{1}{2}$ miles south-westward of Sha'ab Rūmi beacon a chain of small broken reefs, the southern of which are known as Le Mercier shoals, extends about 9 miles in a south-south-westerly direction ; Le Mercier shoals are marked at their northern end by a framework beacon, surmounted by a cone, 25 feet (7^m6) in height,

Charts 81, 2523.

H*

Charts 81, 8c.

situated about $10\frac{1}{4}$ miles south-south-westward of Sha'ab Rūmi beacon, and at their southern end by a concrete beacon, surmounted by a drum, 13 feet (4^m0) in height, situated about $2\frac{1}{4}$ miles south-westward of the northern beacon.

Charts 3492, 81.

Wingate reefs, the northern extremity of which, is situated about one mile westward of the southern beacon marking Le Mercier shoals, extend about 8 miles in a south-south-westerly direction and consist of a chain of small broken reefs, the eastern and southern edges of which are steep-to and well defined but the inner edge is considerably broken. A concrete beacon, surmounted by a "T", 13 feet (4^m0) in height, stands at the north-western end of these reefs, about 2 miles south-westward of the southern beacon on Le Mesurier shoals, and about $1\frac{1}{4}$ miles south-south-eastward of this beacon another concrete beacon, surmounted by a cone, 13 feet (4^m0) in height, stands on the eastern side of the reefs; near the eastern extremity of Wingate reefs, about 3 miles southward of the beacon just described is an iron framework beacon, painted dark brown and surmounted by a sphere, 27 feet (8^m2) in height.

Chart 3492.

Two pairs of beacons, each beacon of the western pair being surmounted by a diamond and each beacon of the eastern pair by a triangle, stand with the front beacons situated one mile northward and north-north-eastward, respectively, of Wingate reefs light-structure (Lat. $19^{\circ} 37' N.$, Long. $37^{\circ} 17' E.$); the rear beacon of the western pair is situated $6\frac{1}{2}$ cables northward of the front beacon, and the rear beacon of the eastern pair about one cable north-eastward of its front beacon. The two beacons of the western pair, when in line, bearing 007° , lead about one cable westward of the south-western extremity of Wingate reefs, in a least known depth of 12 fathoms (21^m9), and the two beacons of the eastern pair, when in line, bearing 036° , lead about $1\frac{1}{2}$ cables north-westward of the south-western extremity of these reefs, in a similar depth.

In addition to the beacons described above there are two beacons, each surmounted by a drum, situated $2\frac{1}{2}$ and $7\frac{1}{2}$ cables north-north-eastward, respectively, of Wingate reefs light-structure; there are also two beacons, each surmounted by a ball, situated about $1\frac{1}{4}$ miles northward of the same light-structure.

Two other beacons are erected on Wingate reefs, one about $1\frac{1}{4}$ miles northward of Wingate reefs light-structure and the other about $1\frac{3}{4}$ cables west-north-westward of this beacon.

A beacon is situated on a wreck lying about one mile northward of the same light-structure.

Charts 3492, 81.

Wingate reefs are covered by a red sector of Port Sudan main light, between the bearings of 186° and 271° .

A light is exhibited, at an elevation of 27 feet (8^m2), from a red steel framework structure on a concrete base, 28 feet (8^m5) in height, situated on the south-western extremity of Wingate reefs, close to an iron framework beacon, surmounted by a diamond, painted dark brown, and 28 feet (8^m5) in height.

Chart 81.

Marsa Halote, the northern entrance point of which lies about

Charts 81, 8c, 2523.

Chart 81.

2½ miles southward of the southern entrance point of Marsa Darūr, is a small inlet, filled with the coastal reef.

Charts 205, plan of Mersa Wi Ai; 3492, 81.

Between the southern entrance point of Marsa Halote and the north-eastern entrance point of Marsa Gwiyai (Mersa Wi Ai), 7½ miles southward, the coast is fringed by a reef, which extends to as far as half a mile offshore; for a distance of about 2½ miles northward of the northern entrance point of Marsa Gwiyai there are several rocks and shoals lying as far as 3½ cables eastward of the edge of the coastal reef. *Chart 205, plan of Mersa Wi Ai.*

The entrance to Marsa Gwiyai is through a gap in the coastal reef, about one cable wide, but south-south-westward of the south-western extremity of a flat sandy peninsula, which forms the north-eastern entrance point, the channel is narrowed to about half a cable by shallow banks on either hand. The small bay forming the head of Marsa Gwiyai is encumbered with reefs and is only available for boats. *Chart 3492.*

Between the southern entrance point of Marsa Gwiyai and the entrance to Port Sudan, about 3 miles southward, the coast is bordered by a reef, which extends to as far as about 7 cables offshore; several rocky heads lie from about 2 to 3 cables eastward of the edge of the coastal reef which should be given a fair berth.

The Inner channel, southward of Port Sudan (*Lat. 19° 36' N., Long. 37° 14' E.*), is continued on page 204. *Chart 81.*

Currents.—Near Sanganeb reef northerly and westerly currents, with considerable rates, may be experienced throughout the year, but especially in summer; currents at times set in the opposite directions but chiefly in winter.

Strong westerly currents have been experienced in the vicinity of Wingate reefs.

Chart 8c.

Anchorage in Inner channel.—Anchorage, in depths of about 10 fathoms (18^m3), rock and sand, can be obtained under the lee of many patches of the outer reefs, especially north-eastward of Marsa Arakiyai.

Chart 8c, plan of Mersa Ar-rakiyai.

There is anchorage in depths of from 10 to 14 fathoms (18^m3 to 25^m6), mud, off the eastern side of the coral islet in the entrance to Marsa Arakiyai, between the coastal reefs; during northerly winds it is necessary to keep the weather reef aboard, but the holding ground is good, and it is smooth in all winds. There is only room for one vessel to anchor, with a short scope of cable.

Chart 8c.

Native boats anchor close in at Marsa Aweitir, and there is just room for a small vessel with local knowledge to lie, in a depth of 20 fathoms (36^m6), moored head and stern, with an anchor close to the northern reef and a short scope of cable, but it affords scarcely any shelter.

Chart 205, plan of Mersa Fijab.

Anchorage for small vessels, in depths of about 75 feet (22^m9), sheltered from all but southerly winds, can be obtained in the entrance to Marsa Fijja, about 4½ cables south-south-eastward of the south-western extremity of the peninsula on the northern side of the entrance.

Charts 3492, 81, 8c, 2523.

Chart 205, plan of Mersa Fijab.

When entering, a vessel should pass close round the southern extremity of the coastal reef on the northern side of the entrance to avoid a coral patch, with a depth of 13 feet (4^m0) over it, lying about 1½ cables west-
5 south-westward of that extremity.

Charts 205, plan of Mersa Fijab; 8c.

Weihemehi tower (page 197) in line with Jebel Tagwiai, bearing 236°, leads towards this cove until a conspicuous hill near the coast bears 310°, which leads into the entrance; this hill is often visible when
10 the mountains inland are obscured by clouds. This tower stands on a small eminence about 4 miles south-westward of Marsa Fijja.

Chart 205, plan of Mersa Darur.

Good anchorage can be obtained about 3½ cables southward of the entrance to Marsa Darūr (Lat. 19° 50' N., Long. 37° 16' E.), between
15 the eastern islet on the southern side of the entrance and the detached reef 2½ cables eastward, in depths of about 40 feet (12^m2), about 2 cables east-south-eastward of the eastern extremity of this islet; there is, however, but little swinging room here and it is well to have a stern anchor to the coastal reef south-westward to guard against a
20 squall from offshore at night, which is not unusual.

Anchorage can also be obtained north-eastward of the entrance to the inlet, about 2 cables northward of the detached reef, in depths of about 60 feet (18^m3), but it is open, especially to the prevailing northerly winds.

Small vessels can anchor in the inlet, about 2 cables westward of
25 the northern extremity of the eastern islet, in depths of from 9 to 12 feet (2^m7 to 3^m7), mud.

From seaward the position of this inlet was marked, in 1904, by a fairly large white house, about 1½ miles west-south-westward of the entrance, which stands by itself amongst a few bushes, and is very
30 conspicuous, especially with the morning sun shining on it. This house, bearing 249°, leads to the entrance to the harbour. The south-eastern edge of the coastal reef on the northern side of the entrance is marked by a heap of small boulders, but the coastal reef on the southern side is difficult to distinguish, especially in calm weather.

35 *Chart 3492, plan of Port Sudan.*

PORT SUDAN.—Port Sudan, known to the Arabs as Sheikh Barghūth, is an inlet extending north-westward, from which, about three-quarters of a mile within the entrance, a short arm extends west-
ward, terminating in a mudflat, which is inundated at times; this
40 inlet is, for the greater part, bordered by reefs, which are visible, but it is free from dangers in the fairway.

A railway bridge spans the inlet, about 1½ miles north-north-westward of the head of the outer breakwater; this can be opened, leaving a passage, 115 feet (35^m0) wide, with a depth of 29 feet (8^m8) in it.

45 *Chart 3492, plan of Approaches to Port Sudan.*

The limits of the port extend as far eastward as an imaginary line joining the beacon near the eastern extremity of Wingate reefs and the beacon, about 7 miles southward, on the northern extremity of North Towertit (North Towartit) reef.

50 **Winds.**—Between July and September, violent squalls may occur without warning; they usually blow from between south-east and west and may reach gale force or more. Squalls from westward carry sand and are known locally as “haboobs.” It is not advisable for

Chart 3492, plan of Approaches to Port Sudan.

vessels to be lying to their own anchors in the inner harbour (*Lat. 19° 37' N., Long. 37° 14' E.*) at these times; they should be alongside, or moored to buoys. A vessel which has to be moored stern on should have a good scope of cable ahead on both anchors, and be well secured aft. 5

From October to June the prevailing northerly wind generally allows safe anchorage. The short sharp rain squalls of the rainy season (October to January) are accompanied by wind, but it is seldom strong enough to cause uneasiness. 10

For Meteorological tables, see page 55.

Chart 81.

Aspect.—Landmarks.—The land in the vicinity is a plain, with a few elevations and clumps of mimosa bushes, rising gradually to the foot of the hills, about 7 miles inland. See also page 194; the aspect 15 of the coast southward of Port Sudan is described on pages 204-205.

Chart 3492, plan of Port Sudan.

The following objects are conspicuous from seaward:—a salt mill, with an aerial ropeway, situated on the south-western side of the entrance to Port Sudan, about $5\frac{1}{2}$ cables south-south-westward of the head of the outer breakwater; four black transporters at the coal depot on the South Coal quay, situated about $7\frac{1}{2}$ cables north-north-westward of the salt mill; two water-towers, each 126 feet (38^m4) in height, standing together, on the eastern side of the entrance, about $5\frac{1}{2}$ cables north-westward of the head of the outer breakwater; a flagstaff, on the western shore of the inlet, about $6\frac{1}{2}$ cables northward of the coal transporters; another water-tower, 126 feet (38^m4) in height, situated about $2\frac{1}{2}$ cables west-north-westward of this flagstaff; and the railway bridge previously described. 25

Pilots.—Signals.—Pilotage is compulsory for all merchant vessels. 30 The pilot look-out station, which consists of a white wooden framework tower, 50 feet (15^m2) in height, stands on the western side of the entrance, westward of the north-eastern entrance point. When all the pilots are engaged the following signals will be shown at the look-out station:— 35

By day.—A black ball.

At night.—A red light over a green light.

These signals indicate that movements are taking place in the harbour, and that vessels should not approach within one mile of the entrance. Pilots will proceed to meet waiting vessels as soon as possible. 40

The pilots cruising ground is southward of Wingate reefs.

Harbour regulations.—The port is under the control of the Port Superintendent of the Sudan Government railways, the Port Manager regulating the berthing of vessels, the loading, unloading, and storage 45 of explosives, &c. A copy of the harbour regulations should be obtained.

Special regulations are in force for vessels carrying petroleum, a copy of which should also be obtained. Vessels carrying petroleum should, on approaching the harbour (*Lat. 19° 37' N., Long. 37° 14' E.*) 50 and whilst in the harbour, display, by day, a red flag and, at night, exhibit a red light at the masthead.

Tugs, whether free or having tows, shall at all times make way for vessels of deep draught, in any part of the harbour or entrance.

Charts 81, 8c, 2523.

Chart 3492, plan of Port Sudan.

Aircraft.—Caution.—When aircraft are about to “alight” or “take off” from Port Sudan harbour, a large red flag will be displayed at the pilot look-out station, and at a flagstaff, 70 feet (21^m3) in height, situated on the western side of the harbour, about 8 cables north-north-westward of it.

While these flags are displayed, no vessels, launches, or boats, other than the launch detailed to assist the aircraft, are allowed to be under way in the harbour.

10 *Chart 3492, Port Sudan and approaches.*

Lights.—Beacons.—Buoy.—A light is exhibited, at an elevation of 63 feet (19^m2), from an iron framework structure, situated on the head of the outer breakwater.

An iron framework beacon, surmounted by a black and white chequered disc, 15 feet (4^m6) in height, stands on the edge of the coastal reef, about 6 cables south-eastward of the light-structure situated on the south-western side of the entrance to the harbour. The wreck of a lighter which, in 1935, was conspicuous, lies stranded on the reef about one mile southward of this beacon.

20 A light is exhibited, at an elevation of 26 feet (7^m9), from a steel framework structure on a concrete base, painted in black and white chequers, situated on the coastal reef on the south-western side of the entrance to the harbour, about 5½ cables south-south-eastward of the head of the outer breakwater.

25 An iron pole beacon, surmounted by a triangle point down, marks the southern extremity of the coastal reef on the north-eastern side of the entrance, about half a cable south-south-westward of the head of the outer breakwater.

30 A light is exhibited, at an elevation of 26 feet (7^m9), from an iron framework structure, situated on the north-eastern side of the entrance to the harbour, about 1½ cables westward of the head of the outer breakwater.

35 A light is exhibited, at an elevation of 28 feet (8^m5), from an iron framework structure, situated near the head of the quay on the south-western side of the entrance, about 2½ cables westward of the light on the north-eastern side of the entrance.

40 Leading lights are exhibited from the western side of the harbour, the front light from a white iron framework structure, with brown bands, 113 feet (34^m4) in height, situated about 5 cables north-westward of the light at the head of the quay on the south-western side of the entrance, and the rear light from a brown iron framework structure, 157 feet (47^m8) in height, situated about 5½ cables north-westward of the front light.

45 A light is exhibited, at an elevation of about 6 feet (1^m8), from a position about 1½ cables eastward of the front leading light. This light marks the outer end of a pipe line.

A white buoy, surmounted by a ball, marks the edge of the coastal reef at the north-western end of East Main quay (*Lat.* 19° 36' N., *Long.* 37° 14' E.), about 2 cables eastward of the pipe line.

50 A light is exhibited, at an elevation of 101 feet (30^m8), from the southern of the two water towers standing on the eastern side of the entrance.

Lights are exhibited from the head of the Port officer's jetty (No. 5), the head of No. 3 jetty, and the head of No. 13 jetty, for the use of

Charts 81, 8c, 2523.

Chart 3492, Port Sudan and approaches.

harbour craft ; the sectors of the lights indicate the approximate limits of the reefs bordering either side of the harbour.

Chart 3492, plan of Port Sudan.

Submarine telegraph cables.—Beacons.—Buoy.—Prohibited anchorage.—An electric power cable, marked by a notice board at each end, crosses the entrance of the harbour from the position of the light-structure situated about 2 cables eastward of South coal quay to the coastal reef eastward.

There is a number of submarine telegraph cables in the entrance southward of this power cable.

A black beacon, surmounted by a triangle, point down, with the word "Cables" on it, stands half a cable southward of the front leading light-tower, and marks the landing place of the submarine telegraph cables, whence they are led round the western arm near the shore clear of the anchorage.

A similar beacon stands on the southern side of the western arm, about 3 cables southward of the front leading light.

A spherical buoy, painted black and white, surmounted by a triangle, point down, is moored about $2\frac{1}{2}$ cables south-south-westward of the front leading light-tower. Anchorage is prohibited in this vicinity within an area indicated by a pecked line on the chart.

A submarine telephone and a power cable, marked by a notice board at either side, crosses the northern arm from No. 13 jetty.

Anchorage.—Anchorage can be obtained in depths of from 10 to 14 fathoms (18^m3 to 25^m6), soft coral and mud, southward of the entrance to the northern arm, about $1\frac{1}{2}$ cables north-eastward of the eastern extremity of South Coal quay.

Anchorage may also be obtained in the western arm, northward of South Coal quay, in depths of from $6\frac{1}{2}$ to 10 fathoms (11^m9 to 18^m3), soft coral and mud.

There are steel mooring posts on the north-western shore of the harbour, to which the sterns of vessels can be secured after anchoring ; there are also mooring buoys in the harbour and mooring posts on the eastern and western shores of the northern arm northward of the Port officer's jetty. Steam should always be kept at short notice, from June to September, in vessels not alongside the quays ; see "Winds," pages 200-201.

Quays.—There are five berths, each 456 feet (139^m0) long, with depths of 28 feet (8^m5) alongside, at East Main quay, which are equipped with cranes and transporters. North-East pontoon berth is 180 feet (54^m9) long, with depths of 5 feet (1^m5) alongside.

On the southern side of the harbour there is South Coal quay, 908 feet (276^m7) long, with depths of 30 feet (9^m1) alongside the pontoon fenders ; it is equipped with transporters. South Oil berth, 180 feet (54^m9) long, is situated eastward of the coaling quay (*Lat. $19^{\circ} 36' N.$, Long. $37^{\circ} 14' E.$*) ; vessels 450 feet (139^m9) long can berth outside the pontoon fenders here, in depths of 33 feet (10^m1) ; South Salt berth is 530 feet (161^m5) long, with depths of 33 feet (10^m1) alongside the pontoon fenders.

A landing jetty, with a depth of 2 feet (0^m6) alongside, is situated on the northern side of the western arm about half a cable westward of the submarine cable beacon.

North-East quay, on the eastern side of the harbour, about 5 cables

Charts 81, 8c, 2523.

Chart 3492, plan of Port Sudan.

north-north-westward of the north-western end of East Main quay, is 840 feet (256^m0) long, with depths of 20 feet (6^m1) alongside the pontoon fenders, and North-West quay, on the western side of the harbour, opposite North-East quay, is 287 feet (87^m5) long, with depths of 4 feet (1^m2) alongside.

All the quays, except North-West quay, are connected to the railway system.

Charts 3492, 81.

- 10 **Directions.**—The directions for a vessel approaching Port Sudan from seaward are given on pages 195-196. The leading lights in line, bearing 305°, lead through the entrance channel to the anchorage.

Vessels leaving harbour have the right of way.

Chart 3492, plan of Port Sudan.

- 15 **Town.—Communications.**—The town is divided into East town, West town, and South town; it is the headquarters of the Port Sudan and Suākin districts. In 1930, the population was about 20,000, of whom 700 were Europeans. There is a Government hospital for Europeans and natives.

- 20 Port Sudan is connected with the general railway and telegraph systems. There is also an Air Mail service. There is regular steamer communication with other Red sea ports and all parts of the world.

There is a radio station at Port Sudan, *see* page 25.

- Port facilities.**—Large stocks of coal and fuel oil are available; vessels coal alongside the coaling quay or from lighters while at anchor, and vessels take in fuel oil at East Main quay.

Fresh provisions are plentiful and water is laid on to the quays; water can also be supplied from barges. Ice is obtainable.

Tugs and lighters are available.

- 30 Minor temporary repairs can be executed; it is advisable, if proceeding to the port for this purpose, to ascertain from the Port Authorities, by radio, whether repairs can be effected. There is a floating crane, with a capacity of 15 tons, a fire float fitted with a salvage pump, also a salvage tug.

- 35 There is a patent slip at Port Sudan, *see* Appendix I.

Deratisation can be carried out in cases of urgency, *see* page 20.

Shipping.—Trade.—In 1933, 778 vessels with an aggregate tonnage of 2,920,855 entered this port.

- The principal exports are cotton, gum, senna and ivory; the chief imports are sugar, cotton goods, machinery, timber, and iron.

Chart 81.

- INNER CHANNEL.—Port Sudan to Suākin** (continued from page 199).—About 5½ miles south-south-eastward of the entrance to Port Sudan (*Lat.* 19° 36' N., *Long.* 37° 14' E.) there is an inner channel, between the coastal reef and the off-lying dangers, leading south-south-eastward to eastward of the entrance to Suākin harbour; it has a least navigable width of about one mile.

The track through this part of the Inner channel is indicated by a pecked line on the chart.

- 50 *Charts 81, 8c.*

Aspect.—The coast is about 2 feet (0^m6) high backed by a wide plain, which is dotted with shrubs and grass tufts in winter but at other times is a brown desert; this plain, though flat and level in

Charts 81, 8c, 2523.

Charts 81, 8c.

appearance, rises gently towards the mountains from 10 to 20 miles inland, becomes slightly undulating and is intersected by many dry water courses.

A well defined range of hills, from about 300 to 400 feet (91^m4 to 121^m9) high, rises abruptly from the plain, with mountainous masses from about 4,000 to 7,000 feet (1,219^m2 to 2,133^m6) high within them, the summits being about 25 miles inland; from seaward they all appear barren and brown, but many green spots and perennial streams are reported amongst the mountains.

During winter the mountains are frequently obscured for long periods by haze or rain-clouds, but several summits amongst the hills nearer the coast are generally clear and are good landmarks.

Chart 81.

Jebel Hadarāweb (Hadarawip) is a range of irregular mountains lying about 10 miles inland, midway between Port Sudan and Suākin; the central peak, which is pointed, forms a good landmark and is 1,607 feet (489^m8) high; a peak, about 1½ miles south-westward of the central peak, is 1,640 feet (499^m9) high, and from southward has the appearance of a blunt cone.

Jebel Waratab, 9 miles westward of Suākin, is the highest and most prominent conical mountain in this locality; its summit forms two small knobs. From a distance it resembles a truncated cone, except on south-westerly to west-south-westerly bearings, when it is almost sharp.

Jebel Gararat, 2½ miles westward of Jebel Waratab, is a rounded peak with a long serrated shoulder; under this peak, on south-westerly bearings, a remarkable shining white quartz patch is frequently visible.

Southward of Jebel Waratab the higher ranges trend inland, but Hamob Adarob (North Saddle), saddle-shaped, situated about 4 miles southward of Jebel Waratab, and Hamob Hadal (South Saddle), also saddle-shaped, lying about 3 miles farther southward, are conspicuous; the former is frequently difficult to see on account of its colour and the latter loses its saddle-shape when bearing more than 280°. A small wedge-shaped hill at Hashin (Quoin), about 3½ miles east-north-eastward of Hamob Adarob, is conspicuous.

Charts 8c, 8d, 2523.

Southward of Suākin a sandy plain rises gradually to the inland ranges, with some hills nearer the coast rising abruptly from it; the interior is mountainous. The mountain range approaches the coast about 27 miles southward of Suākin, and then trends south-westward, leaving a wide plain on which, about 55 miles southward of Suākin (*Lat. 19° 07' N., Long. 37° 20' E.*) and about the same distance inland, stands the isolated Jebel Shaba (Schabab), about 4,000 feet (1,219^m2) high.

Chart 3492.

Channels from seaward to Inner channel.—Northward of North Towertit reef.—The channel between North Towertit reef and Wingate reefs light-structure is free from dangers, and a vessel after passing northward of North Towertit reef beacon can steer into the Inner channel; if coming from north-eastward the directions given on pages 195-196 should be followed.

Chart 81.

Hindi Gider to Inner channel.—Light.—Beacons.—Buoy.—

Charts 81, 8c, 2523.

Chart 81.

There is a channel leading from Hindi Gider, an islet lying about 34 miles east-north-eastward of the entrance to Suākin harbour, to the Inner channel; it is winding and leads between the reefs on either

5 hand.

Charts 81, 8c, 8d.

The Suākin group of islets, reefs and shoals, fronting the coast from Suākin to Khōr Nawarat (Khor Nowarat), about 77 miles south-eastward, extends from North Jumna shoal, 11 miles west-north-westward of Hindi Gider, to Dahrat 'Abid islet, about 80 miles south-eastward of the same islet; some of the reefs lie 15 miles north-eastward of this line and about 40 miles offshore. The western edge of this group, where there are many sunken rocks and deep channels, lies generally about 10 miles offshore.

15 Chart 81.

Hindi Gider, the northernmost islet of the Suākin group, is covered with bushes; it is bordered by a reef, which is steep-to, and extends to a distance of about one cable offshore.

A light is exhibited, at an elevation of 87 feet (26^m5), from a red steel framework structure, situated on the western side of Hindi Gider; this light being of low power, extreme caution should be exercised when approaching it from southward in bad visibility, under which conditions it is advisable to give it a wide berth.

A white pyramidal masonry beacon, 15 feet (4^m6) in height, stands 25 on Hindi Gider.

Peshwa, situated on the southern side of the fairway, about 5 miles eastward of Hindi Gider, is a coral reef, over which the sea generally breaks; a rock, which was reported, in 1833, and the position of which is doubtful, lies about midway between Peshwa and Hindi Gider.

30 King shoal, which seldom breaks and is only visible under good conditions, lies about 4½ miles south-eastward of Hindi Gider; Brisbane reef, about one mile southward of King shoal, breaks in a moderate swell and is usually visible; a rock, having a depth of less than 6 feet (1^m8) over it, and the position of which is doubtful, is charted about 35 1½ miles west-north-westward of Brisbane reef.

Seil 'Ada Saghīr, the position of which is doubtful, was reported, in 1833, to be a sand and coral reef, about 4½ miles south-south-westward of Hindi Gider, but it was not seen when this locality was examined, in 1884, so possibly the sand may have been washed away, 40 leaving only a submerged reef; Farquhar reef, on which there is a small sand cay, from 3 to 4 feet (0^m9 to 1^m2) high, lies about 7½ miles south-south-westward of Hindi Gider (*Lat. 19° 23' N., Long. 37° 54' E.*).

Keary reef and Logan reef, lying about 6½ miles south-westward and 4½ miles west-south-westward, respectively, of Hindi Gider, break in 45 a moderate swell and are usually visible.

North Jumna shoal, lying on the northern side of the fairway, 11 miles west-north-westward of Hindi Gider, is a coral reef, awash and steep-to, over which the sea breaks; in a calm a few coral heads show above water; it is marked by a black iron framework beacon, surmounted by 50 a triangle, point up, 24 feet (7^m3) in height.

Sha'ab 'Anbar, the northern extremity of which lies on the south-eastern side of the fairway, about 8½ miles southward of North Jumna shoal beacon, extends about 5 miles southward; it has gaps in places, and the sea generally breaks over its northern end. Nearly in the

Charts 8c, 2523.

Chart 81.

middle of this reef stands a coral rock, 5 feet (1^m5) high, and a rock, 3 feet (0^m9) high (*Lat.* 19° 17' N., *Long.* 37° 42' E.), stands 1½ miles northward of the 5-foot high (1^m5) rock.

A reef, the northern extremity of which, nearly awash, lies about 2½ miles south-south-westward of the 5-foot (1^m5) high rock on Sha'ab 'Anbar, extends 2½ miles south-south-eastward with alternately deep and shoal water; a circular reef, which shows light green, lies about three-quarters of a mile south-eastward of this reef.

Canara reef, situated about 6 miles south-south-eastward of the 5-foot (1^m5) high rock on Sha'ab 'Anbar, has several heads, with depths of from one to 2 fathoms (1^m8 to 3^m7) over them; about three-quarters of a mile south-south-eastward of Canara reef are three detached coral reefs extending about half a mile in an easterly and westerly direction.

Myrmidon pinnacle, situated on the south-eastern side of the fairway, about 6 miles south-westward of the 5-foot (1^m5) high rock on Sha'ab 'Anbar, has a depth of 3 fathoms (5^m5) over it, and is steep-to; Sha'ab Quseir (Shab Gusser), charted about 1½ miles farther westward but which is reported to lie about three-quarters of a mile west-north-westward of its charted position, has a few coral heads above water over which the sea breaks, and is marked at its eastern end by a black iron framework beacon, surmounted by a triangle, point up, 24 feet (7^m3) in height.

South Jumna shoal, lying on the northern side of the fairway, about 4½ miles westward of Sha'ab Quseir beacon, has several heads, with depths of from 1½ to 5 fathoms (2^m7 to 9^m1) over them, and is marked on its south-western side by a can buoy, painted with red and white horizontal bands, and surmounted by a staff and red disc; the sea only breaks over this shoal in a heavy swell. A rocky bank, with irregular depths, extends about 2 miles eastward of South Jumna shoal to within about three-quarters of a mile of the fairway. Discoloured water was reported, in 1886, about 6 miles north-eastward of South Jumna shoal.

Sha'ab Tawīl (Shab Tuīl) is a reef, the western extremity of which is situated on the south-eastern side of the fairway, about 1½ miles southward of Sha'ab Quseir beacon (*Lat.* 19° 11' N., *Long.* 37° 36' E.); a shallow bank, encumbered with rocks, extends about 2 miles south-south-eastward of it; the sea generally breaks over this reef, but there is little indication of the bank or rocks on it.

Burns reef, Entrance reef, and Cunningham shoal form a chain of coral heads, beginning at a position 4½ miles west-south-westward of Sha'ab Tawīl and extending west-south-westward to within about 2 miles of the coastal reef. Burns reef has a least depth of 1½ fathoms (2^m7) over it; a small detached 2-fathom (3^m7) patch lies about three-quarters of a mile south-eastward of the middle of Burns reef. Entrance reef is a coral patch over which the sea generally breaks; a coral head, with a depth of 2 fathoms (3^m7) over it, lies about half a mile east-north-eastward, a 2½-fathom (4^m6) head about the same distance south-eastward, and a 1½-fathom (3^m2) head about a quarter of a mile westward of Entrance reef. Cunningham shoal, with a depth of less than one fathom (1^m8) over it, is almost connected with Entrance reef by a narrow tongue, which is sometimes indicated by its blue colour.

Caution.—From Sha'ab Tawīl, south-westward to Qad Eitwid (Kad Eitwid) reefs, distant about 10 miles, and southward of the reefs

Chart 81.

just described, is an area which has been only partially examined, and in which lie many reefs; it would be dangerous to attempt to pass through it.

- 5 Dependence must not be placed on the buoys and beacons marking the approaches to Suākin, as they are liable to be washed away.

Charts 81, 8c, 8d.

- Currents.**—H.M. Surveying ship *Merlin* on several occasions in June, 1919, experienced strong westerly or south-westerly currents
10 near the north-eastern end of the Suākin group, but generally only when close to the islets, and not westward of Hindi Gider. In 1929, it was reported that north-easterly currents had been experienced between Hindi Gider and Masamirit (Masamahru) islet, about 60 miles south-eastward.

- 15 Between July and August, 1935, H.M.S. *Penzance*, in this area, experienced a current setting south-west or south-south-west which generally commenced to flow at about 1400 daily, continuing until about midnight, and often attaining a rate of three-quarters of a knot. North-easterly sets were also occasionally experienced after a south-
20 westerly wind, but they were of short duration and erratic in direction.

Chart 81.

- Anchorage.**—**Directions.**—Anchorage has been obtained in a depth of 10 fathoms (18^m3), one mile 160° from the north-western extremity of Sha'ab Tawil, with 2 cables swinging room. A vessel
25 should approach to a position about one mile south-westward of this reef, and thence steer for the north-eastern extremity of the breakers, bearing 045°; the depths decrease from 17 to 10 fathoms (31^m1 to 18^m3), when the vessel should anchor with the north-western extremity of the breakers bearing 340°.

- 30 Except in the early morning when the sun is in the most favourable position, this approach to Suākin (*Lat. 19° 07' N., Long. 37° 20' E.*) is reported to be somewhat difficult, especially in summer, owing to the landmarks being generally obscured by mist; the reefs also are not easily distinguished at this season, owing to the prevailing calms.
35 Vessels having made Hindi Gider should be able, apparently, to follow the pecked line on the chart easily. Sha'ab 'Anbar, over which the sea breaks occasionally, and Sha'ab Quseir, over which the sea always breaks, are good marks; as Sha'ab Quseir has been reported out of its charted position care should be exercised in its vicinity. This channel
40 is sometimes preferred for vessels leaving Suākin late in the afternoon, when if South Jumna shoal is passed before dark, a course can be steered for the open sea.

- The north-easternmost beacon on the northern side of the entrance to Suākin harbour in line with the wedge-shaped hill at Hashin, bearing
45 about 254°, leads, from westward of South Jumna shoal, about a quarter of a mile southward of the southern extremity of Towertit reefs.

Coast.—**Dangers.**—**Beacons.**—There are several breaks in the coastal reef between Port Sudan and Suākin, about 30 miles south-south-eastward, affording shelter to boats and dhows.

- 50 The low coast is a raised coral reef furrowed by water-courses, which are only flooded in the rainy season.

The inner edge of Towertit reefs, the northern extremity of which is situated about 5½ miles south-south-eastward of Wingate reefs light-structure and 3 miles offshore, extend about 23 miles south-south-east-

Charts 8c, 2523.

Chart 81.

ward; the outer edge of these reefs trends about 15 miles south-eastward to Heyman reef, over which the sea seldom breaks, and thence 3 miles southward to close eastward of Williamson shoals, over which, also, the sea seldom breaks. Towertit reefs, except those at 5 their southern end, show in a moderate breeze.

Charts 3492, 81.

North Towertit reef, at the northern end of Towertit reefs, is marked at its northern extremity by a white pyramidal masonry beacon, surmounted by a red staff and triangle, 30 feet (9^m1) in height. The 10 western edge of Towertit reefs is marked by three beacons, the northern one, an iron beacon, surmounted by a staff and diamond, 10 feet (3^m0) in height, situated about 3½ miles southward of North Towertit reef beacon, the central one, an iron beacon, surmounted by a staff and cone, 10 feet (3^m0) in height, about 10½ miles farther south-south-east- 15 ward, and the southern beacon, an iron one, surmounted by a staff and diamond, 10 feet (3^m0) in height, about 4½ miles further southward.

Chart 81.

There are no known dangers southward of Williamson shoals, but vessels should not pass north-westward of an imaginary line drawn 20 south-westward from these shoals to the southern extremity of the Towertit reefs.

The coastal reef extends to a distance of nearly half a mile offshore at Towertit (Towartit) elbow, about 8 miles south-south-eastward of the outer breakwater at Port Sudan, and narrows the Inner channel here 25 to a width of 1½ miles; a red concrete beacon, surmounted by a disc, 23 feet (7^m0) in height, marks the edge of the reef at Towertit elbow.

Thence to Suākin (*Lat. 19° 07' N., Long. 37° 20' E.*) the edge of the coastal reef is clearly visible except at Hadarāweb (Hadarāwip) spit, 7 miles south-south-eastward of Towertit elbow beacon, and at Sha'ab 30 Damath, about 8 miles further southward.

The position of Marsa Amid, a cove about 3½ miles southward of Towertit elbow beacon, is indicated by a conspicuous islet covered with mangroves, which lies within the coastal reef, about three-quarters of 35 a mile northward of this cove.

Hadarāweb spit, known to the Arabs as Ras 'Abdallah, has a depth of 2½ fathoms (4^m1) at its eastern edge, about three-quarters of a mile offshore, and is marked by a brown iron framework beacon, surmounted by a staff and triangle, about 12 feet (3^m7) in height; two conspicuous palms were situated, in 1932, about 1½ miles north-westward of this 40 beacon. These palms are nearly always sighted before the beacon, whether approaching from northward or southward, and may be mistaken for it.

A shoal, with a depth of 7 fathoms (12^m8) over it, lies in the recommended track, about 2½ miles south-south-eastward of Hadarāweb 45 beacon.

The position of Marsa Ata is indicated by a fairly conspicuous wooded islet lying about 4½ miles southward of Hadarāweb beacon; the depths off this islet, for a distance of about 2 cables, are irregular.

Sha'ab Damath, the northern extremity of which is about 3½ miles 50 southward of Marsa Ata, lies about one mile offshore, and is marked near its northern end by an iron beacon, surmounted by a staff and a "T", 10 feet (3^m0) in height; the sea does not always break over this reef.

Charts 8c, 2523.

Chart 81.

Marsa Kuwai, within Sha'ab Damath, is more commodious than the inlets remarked on above, and there is room in the southern part of this bight for three or four vessels of moderate size; the depths in Marsa Kuwai are irregular, and the southern extremity of Sha'ab Damath, which does not show up well, should be buoyed before entering.

The Inner channel, southward of Suākin, is continued on page 212.

Chart 901.

10 **Suākin harbour.**—Suākin harbour, the entrance to which had a least navigable width, in 1942, of 120 yards (109^m7), should not be used by vessels of more than 330 feet (100^m6) in length or over 20 feet (6^m1) draught; the shores of the harbour are fringed by reefs which dry from May to August but are covered in December.

15 The entrance channel trends south-westward to Quarantine island, about 2 miles within the entrance, where the harbour divides into two arms. The inner part of the north-western arm is much obstructed by shoals; at the head of the south-western arm is an island, on which is the town of Suākin. A narrow channel, eastward of the town, leads
20 into a shallow basin south-eastward of it.

Quarantine island is bordered by reefs and is connected with the western side of the harbour by a causeway and a bank, which dries.

The port is under the control of the Commissioner, Port Sudan and Suākin administration.

25 **Landmarks.**—The following landmarks are conspicuous in the approach to the harbour:—the black condenser buildings of the new quarantine station, about 4 cables westward of Graham point (*Lat.* 19° 07' N., *Long.* 37° 21' E.), the south-eastern entrance point of the harbour; the yellow stone chimney, 105 feet (32^m0) in height, situated
30 on the eastern part of Quarantine island, and the white chimney of the cotton works about 7½ cables southward of this yellow chimney.

Pilotage.—Vessels proceeding to Suākin can be met by a pilot outside Port Sudan, by giving previous notice to the Port Officer, Port Sudan, and stating the probable time of arrival off that harbour.

35 A vessel leaving Suākin can also obtain a pilot by giving 24 hours' notice to the Port Officer, Port Sudan.

Dangers.—Beacons.—The entrance channel is marked by five stone beacons; three, on the edge of the reef on the north-western side of the entrance, are painted white and numbered 1, 3, and 5, beginning
40 at the outer beacon; two, on the edge of the reef on the south-eastern side of the entrance, are painted in black and white chequers and numbered 2 and 4. No. 1 beacon is surmounted by a staff; No. 2 beacon is flat-topped and Nos. 3, 4 and 5 beacons have pointed tops.

45 An iron beacon, surmounted by a black and white chequered disc, 8 feet (2^m4) in height, stands on the edge of the reef, about 1½ cables north-north-eastward of Graham point.

A rock, with a depth of less than 6 feet (1^m8) over it, lies on the north-western side of the entrance channel, about 7½ cables south-westward
50 of No. 5 beacon and about a quarter of a cable offshore and half a cable south-westward of the quarantine pier.

A black and white iron pole beacon is situated on the edge of the reef on the south-eastern side of the channel, about 8½ cables west-south-westward of Graham point, and another black and white beacon,

Chart 901.

surmounted by a cone, stands on the edge of the reef about 3 cables south-westward of this beacon.

Anchorage.—Anchorage for large vessels is limited to the area north-eastward of Quarantine island, where there is room to berth two ships with sterns secured to bollards on that island. Only small vessels could anchor in the channel north-eastward of the town, or in the basin south-eastward of it. 5

When laying at Suākin in winter, it is advisable to moor and secure the stern well, as at night violent squalls from the mountains, accompanied by heavy rain, are not uncommon. 10

Piers.—With the exception of Quarantine and Cemetery piers, situated on the northern side of the entrance channel about 4 and 6½ cables, respectively, south-westward of Graham point, and the railway pier on the opposite side between these two, all piers shown on the chart are in ruins. Even the three piers mentioned can only be used by small boats. 15

Quarantine.—The new quarantine station is situated northward of Quarantine pier, on which stand two flagstuffs.

Charts 901, 81.

Directions.—When entering the channel the eye is the best guide, the beacons being easily distinguished. Jebel Waratab (page 205), bearing 271°, leads to the entrance. 20

Chart 901.

When nearing the entrance, bring Graham point (*Lat. 19° 07' N., Long. 37° 21' E.*) in line with the cotton works chimney, bearing 218°, which leads into mid-channel about 2 cables northward of No. 2 beacon; thence a vessel should keep in the fairway of the channel, being guided by the beacons. Care should be taken to give a wide berth to the rock south-westward of the Quarantine pier. 25

Owing to lack of swinging room it is not easy to proceed out of harbour unless the wind is from seaward, which occurs in the afternoons. 30

Town.—The town of Suākin is now only of importance as a pilgrim station; the houses, built in the Arab style, are lofty. The south-western end of the island on which the town is built is connected by a causeway with El Kaff, a suburb on the mainland. 35

Communications.—Suākin is connected with the railway system.

There is steamer communication with other Red sea ports.

Port facilities.—Coal can be obtained by rail from Port Sudan.

Fresh provisions can be obtained but vegetables are very scarce, being brought from Suez, except in winter; fish is plentiful. 40

There is a quarantine hospital.

Winds and weather.—**Climate.**—In spring and summer the sea breeze generally sets in about 0900 and subsides suddenly at 1700, but outside the harbour it continues later. 45

Sand storms are experienced in summer; strong squalls off the land fill the air with sand for some 50 miles seaward, reducing the visibility to half a mile. During winter, when the high mountain ranges are generally obscured by clouds, the northerly wind blowing along the plain between the mountains and the coast carries a cloud of reddish dust with it which dims, when it does not entirely obscure, the lower and nearer summits. 50

From the beginning of November until March the climate is equable and pleasant, never very hot in the day and always cool at night.

Charts 81, 8c, 2523.

Chart 901.

The heat is very great during June, July, August, and September, the thermometer rising in sand storms to 115° on board ship, and to several degrees higher in the town. Europeans have to guard against sun-stroke.

Charts 675, plans of Marsa Maqdam to Talla Talla Kebir and Shubuk channel; 81.

INNER CHANNEL.—Suākin to South point (continued from page 210).—From the entrance to Suākin the Inner channel, passing between the coastal reef and Qad Eitwid reefs, trends about 13½ miles southward, thence about 11 miles eastward and about 22 miles south-eastward, passing northward and eastward of Sha'ab el Shubuk and southward and westward of the dangers off-lying it to a position about 9 miles eastward of South point, the south-eastern entrance point of Trinkitat harbour.

There is also a channel, available for small vessels with local knowledge, south-westward of Sha'ab el Shubuk, the northern entrance to which is situated about 16½ miles south-south-eastward of the entrance to Suākin.

The best track through the Inner channel, leading from Suākin (*Lat. 19° 07' N., Long. 37° 20' E.*) to eastward of South point, is indicated by a pecked line on the charts. Good landmarks for a vessel using this channel are Jebel Waratab (page 205), Black hill, situated about 13½ miles southward of Jebel Waratab, and Gumberit (Gumbereid), a mountain about 3½ miles east-south-eastward of Black hill.

Charts 81, 8c, 8d, 2523.

Aspect.—The aspect of the land in this neighbourhood is described on page 205.

Southward of Suākin the coast is frequently obscured by dust and mirage. From seaward of Sha'ab el Shubuk the coast between Marsa Sheikh Sa'd, about 19 miles south-south-eastward of the entrance to Suākin, and Ras Maqdam, about 18 miles east-south-eastward of Marsa Sheikh Sa'd, is not visible.

Chart 81.

Outlying islets and dangers.—The outlying dangers which bordered the channel leading from Hindi Gider to Suākin are described on pages 205-207.

Sha'ab Qutb (Shab Kutb), a coral reef, is situated about 8 miles south-south-eastward of Hindi Gider; Burkut (Barakut) islet, lying about 13½ miles south-south-eastward of Hindi Gider, is low and is composed of sand and coral, with a fringing reef extending about half a mile north-eastward of it.

Between Sha'ab Qutb and Burkut islet are five reefs, named in order from north-eastward:—Protector reef, with a rock, with a depth of less than 6 feet (1m8) over it, about three-quarters of a mile north-westward of its northern end; Sha'ab Burkut (Shab Barakut), having a depth of less than 6 feet (1m8); Preserver reef, and Penzance reef.

Chart 8c.

Barrā Mūsa Kebīr, an islet lying about 9½ miles eastward of Burkut islet, is composed of sand and coral and has a few bushes on it; it is steep-to. A rock, with a depth of less than 6 feet (1m8) over it, lies about 1½ miles north-westward of this islet.

Charts 81, 8c, 2523.

Chart 8c.

Barrā Mūsa Saghīr, an islet lying about 9 miles southward of Barrā Mūsa Kebīr, is composed of sand and coral, and is steep-to.

Charts 81, 8c.

A shoal with a depth of 2 fathoms (3^m7) over it, is situated about $5\frac{1}{2}$ miles westward of Barrā Mūsa Saghīr; Chiltern patch, lying about 13 miles westward of this shoal and 11 miles south-westward of Burkut islet, has also a depth of 2 fathoms (3^m7).

Chart 81.

Starkey patch, lying about $7\frac{1}{4}$ miles west-south-westward of Burkut islet, has a depth of 3 fathoms (5^m5) over it. Sha'ab Munkar (Shab Muncar), about 11 miles west-south-westward of the same islet, is crescent-shaped and open on its southern side; the sea breaks over this reef. A shoal was reported by H.M.S. *Condor*, in 1886, to lie about one mile east-south-eastward of Sha'ab Munkar, but its position is doubtful. Pender reef, with a depth of $3\frac{1}{4}$ fathoms (5^m9), lies about $1\frac{3}{4}$ miles north-westward of Sha'ab Munkar.

Franks reef was reported, in 1881, when the sea was observed breaking over it, but was not seen during the survey of this locality, in 1884; it lies about $3\frac{1}{2}$ miles northward of Sha'ab Munkar (*Lat.* $19^{\circ} 07' N.$, *Long.* $37^{\circ} 49' E.$).

Seil 'Ada Kebīr islet, situated about $5\frac{3}{4}$ miles north-north-westward of Sha'ab Munkar, is composed of coral and sand, and has a reef extending about half a mile north-north-westward of it.

Chart 8c.

Tamarshiya (Taimashiya) islet, lying about $8\frac{1}{2}$ miles south-south-eastward of Barrā Mūsa Saghīr, is low, composed of sand and coral, and is fringed by a reef.

Hindi Seil (Andi Seli) islet, about $18\frac{1}{2}$ miles eastward of Tamarshiya islet, is a low coral islet fringed by a reef; two rocks, with depths of less than 6 feet (1^m8) over them, lie about 2 and 6 miles, respectively, north-westward of this islet.

Charts 675, Marsa Maqdam to Talla Talla Kebir; 8c.

Talla Talla Kebīr, a group of three islets lying on a reef, the north-western end of which is situated about $8\frac{1}{4}$ miles west-south-westward of Tamarshiya islet, is composed of sand and coral and is covered with bushes; from a distance this group has the appearance of being one island. A bank, with depths of less than 10 fathoms (18^m3) over it, extends to a distance of about $1\frac{1}{4}$ miles south-westward of the western side of the group and to a distance of about $2\frac{1}{2}$ miles south-south-eastward of its southern end; a shoal, with a depth of 15 feet (4^m6), is situated on this bank, about 7 cables westward of the western end of the southern islet.

Chart 675, Marsa Maqdam to Talla Talla Kebir.

Falcon shoal, with a depth of 33 feet (10^m0) over it, lies about 2 miles southward, and Rock Cod bank, consisting of several detached banks, with a least depth of 6 fathoms (11^m0), from about $2\frac{1}{2}$ to 5 miles westward of the southern end of this group.

A bank, with a least depth of 49 feet (14^m9) over it, lies about $7\frac{1}{2}$ miles, and Echo shoal, with a least depth of 26 feet (7^m9), from about $10\frac{1}{2}$ to $12\frac{1}{2}$ miles westward of Talla Talla Kebīr.

Charts 81, 8c, 8d.

The islets and dangers described above all form part of the Suākin

Charts 81, 8c, 2523.

Charts 81, 8c, 8d.

group, which was remarked on on page 206. A description of the islets and dangers further south-eastward is given on pages 222-223.

Chart 8c.

- 5 **Anchorages.**—Anchorage can be obtained, in case of emergency, in depths of from 6 to 18 fathoms (11^m0 to 32^m9), off the southern side of Tamarshiya islet but it is too small to afford protection from the swell.

Chart 675, Marsa Maqdam to Talla Talla Kebir.

- 10 There is fairly good anchorage, in depths of about 9 fathoms (16^m5), sand and coral, with the western extremity of the western Talla Talla Kebir islet, bearing 040°, distant 5 cables.

In 1935, H.M.S. *Weston* found good anchorage with the cairn on the western Talla Talla Kebir islet, bearing 354°, distant 8 cables.

15 *Chart 81.*

- Coast.**—**Islets and dangers.**—**Beacons.**—**Buoy.**—From the south-eastern entrance point of Suākin harbour (*Lat. 19° 07' N., Long. 37° 21' E.*) the coast trends about 12½ miles south-eastward to a point marked by an iron beacon, surmounted by a staff and can, 16 feet (4^m9) in height. The reef bordering this coast extends to as much as 1½ miles offshore, dries in summer, and can usually be seen. Several narrow islets, covered with mangroves and scrub, front this coast which, except from aloft, cannot be distinguished, the coastline being apparently unbroken.

- 25 Two iron beacons, both surmounted by a staff and a "T", and 10 feet (3^m0) in height, are situated about 4½ miles south-eastward and 8½ miles south-south-eastward, respectively, of the entrance to Suākin; the former marks the edge of the coastal reef and the latter stands on the coast.

- 30 Cunningham shoal, lying about 4½ miles east-south-eastward of the entrance to Suākin and about 3½ miles offshore, together with the reefs eastward, are described on page 207; two shoal patches, the positions of which are doubtful, were reported by H.M.S. *Condor*, in 1886, to lie about half a mile south-south-eastward and 1½ miles east-south-east-ward of Cunningham shoal.

- 35 Qad Eitwid reefs, of which Cunningham shoal and Entrance reef are the northernmost, extend southward for about 11 miles fronting the coast and consist of some islets and numerous reefs and shoals, over some of which the sea breaks; there is no navigable passage through these reefs. The islets, in order from northward, are Qad Eitwid, two sandy islets, and South-West islet; the northern sandy islet, situated about 10½ miles south-south-eastward of the entrance to Suākin and about 2½ miles from the coastal reef, has some coarse grass on it; South-West islet, lying about 3½ miles south-westward of Qad Eitwid, 45 is also sandy, with some coarse grass on it.

- Eitwid islet, situated about 4½ miles east-north-eastward of Qad Eitwid, is sandy, with bushes on its north-eastern end, and is fringed by a reef; it is visible from the southern approach to Suākin and is a good landmark. Several rocky patches lie within about 3 miles north-ward of it, others lie about 4½ miles east-north-eastward of it, and a small reef lies about 1½ miles east-south-eastward of it; the sea breaks over many of these patches.

Vessels should not attempt to pass between Eitwid islet and Qad Eitwid reefs.

Charts 81, 8c, 2523.

Chart 81.

A shoal, with a least depth of 4 fathoms (7^m3) over it, lies on the eastern side of the fairway, about 1½ miles northward of South-West islet; another shoal, with a similar depth, lies about 1½ miles south-south-eastward of the same islet.

South-East reef, over which the sea generally breaks, lies about 3 miles east-south-eastward of South-West islet, and is marked by an iron beacon, surmounted by a staff and cone, 16 feet (4^m9) in height; a spit, with depths of less than 10 fathoms (18^m3) over it, extends about one mile south-south-eastward of it and borders the track through the Inner channel. Within a distance of about 1½ miles westward and three-quarters of a mile south-westward of South-East reef are several shoals, with a least depth of 3 fathoms (5^m5), the positions of which may best be seen on the chart.

About 2½ miles west-south-westward and south-westward, respectively, of South-East reef beacon (*Lat. 18° 57' N., Long. 37° 29' E.*) are two shoals, one with a depth of 5 fathoms (9^m1) over it and the other with a depth of 5½ fathoms (10^m1) lying on the northern and southern sides of the fairway; another shoal, with a depth of 5 fathoms (9^m1), lies in the fairway, about one mile southward of the same beacon. *Charts 675, plans of Marsa Maqdam to Talla Talla Kebir and Shubuk channel; 81.*

Sha'ab el Shubuk, the northern end of which lies about 3½ miles southward of South-East reef beacon, is a little known area of reefs, intersected by narrow channels, and with numerous low sandy islets, many of which have bushes on them; this area extends about 17 miles in an east-south-easterly direction and is marked at its south-eastern extremity, about 2½ miles north-eastward of Ras Maqdam, by a beacon, which is not easily distinguished, and consists of a conical white masonry structure, surmounted by a staff and a red drum, 12 feet (3^m7) in height. The northern edge of this area is much broken and sunken and should be given a wide berth, but the north-eastern edge is usually visible.

Chart 675, plans of Marsa Maqdam to Talla Talla Kebir and Shubuk channel.

Close south-eastward of Gap islet, about 5½ miles north-north-westward of Ras Maqdam, is Sumar inlet, a break in the reef, which connects with the channel (page 219) south-westward of Sha'ab el Shubuk; Outer Gap beacon, standing on the edge of the reef, about 5 cables northward of Gap islet, and Inner Gap beacon, situated on the reef on the south-eastern side of the entrance to this inlet, about 3 cables east-south-eastward of Gap islet, are both of white masonry. Long island, the north-eastern point of which is about 6 cables south-westward of Gap islet, lies on the reef on the north-western side of Sumar inlet.

There are three other openings in the reefs between Sumar inlet and the beacon marking the south-eastern extremity of Sha'ab el Shubuk, but they should only be attempted under favourable conditions, with local knowledge; the south-easternmost of these openings has a least depth of 8 fathoms (14^m6) in the fairway.

There are several islets on this part of Sha'ab el Shubuk; Sumar islet, the westernmost of these islets, situated about 1½ miles east-south-eastward of the south-eastern point of Long island, is marked by a masonry beacon standing on the edge of the reef close westward of it. Reef islet, Round islet, Low islet, and Passage islet, the positions of

Charts 81, 8c, 2523.

Chart 675, plans of Marsa Maqdam to Talla Talla Kebir and Shubuk channel.

which may best be seen on the chart, lie near the south-eastern edge of Sha'ab el Shubuk, Round islet, with a small summit in its centre, 5 being the most conspicuous; Reef islet and Low islet lie at the north-western and south-eastern ends of a chain of cays extending west-north-westward of Passage islet.

Chart 81.

Middle shoal, lying on the southern side of the fairway, about 3 miles 10 east-south-eastward of South-East reef beacon, is a coral head with a least depth of $2\frac{1}{2}$ fathoms (4^m6) over it.

The channel between the northern end of Sha'ab el Shubuk and the southern end of Qad Eitwid reefs is about $2\frac{1}{2}$ miles wide but, in addition to Middle shoal, it is encumbered with shoals, having a least depth of 15 4 fathoms (7^m3).

Corner reef, about $7\frac{3}{4}$ miles east-south-eastward of South-East reef beacon (*Lat. $18^{\circ} 57' N.$, Long. $37^{\circ} 29' E.$*), is the northern of two detached reefs lying between the fairway and the north-eastern edge of Sha'ab el Shubuk, and is marked by a masonry beacon, surmounted 20 by a staff and cage; the sea breaks over this reef, except when it is calm, and it is then generally visible. A bank, with a least depth of $3\frac{1}{2}$ fathoms (6^m4) over it, lies about $1\frac{3}{4}$ miles north-westward of Corner reef.

Green reef, the western side of which lies on the north-eastern side 25 of the fairway, about $6\frac{1}{2}$ miles east-north-eastward of Corner reef beacon, is awash on its western and northern sides but its south-eastern side is submerged; two detached coral heads lie about a quarter of a mile westward of the western side of this reef. A coral shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, lies about 2 miles north-north-east- 30 ward of the northern extremity of Green reef; the depths are shoal in this locality.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

Qad Hogit, lying on the south-western side of the fairway, about $2\frac{3}{4}$ miles east-north-eastward of Inner Gap beacon, is an extensive partly 35 sunken reef, the eastern part of which is usually visible but its western part seldom, unless there is a swell causing the sea to break over it; this reef is marked near its centre by a conspicuous conical stone beacon, surmounted by a diamond, 18 feet (5^m5) in height, standing on a small coral patch; a sandbank, 2 feet (0^m6) high, sometimes forms 40 round this beacon. There are some patches, with a least depth of 5 fathoms (9^m1), lying within a distance of about $1\frac{3}{4}$ miles south-south-eastward of Qad Hogit.

Two Islets is the name given to a reef divided into two parts by a very narrow channel, with an islet on each part of the reef; the south- 45 western islet lies on the north-eastern side of the fairway, about $5\frac{1}{4}$ miles north-north-eastward of Qad Hogit; the north-eastern islet, about 3 cables farther north-eastward, is the higher of the two, with some stunted bushes on it where numerous sea birds nest, and forms a good landmark.

50 Endeavour shoals, lying on the north-eastern side of the fairway, from about $1\frac{1}{4}$ to 5 miles east-north-eastward of Qad Hogit, consist of several detached coral patches, having a least depth of $5\frac{1}{2}$ fathoms (10^m1).

Melita patch, a sand and coral shoal lying on the south-western side

Charts 81, 8c, 2523.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

of the fairway, about $1\frac{1}{2}$ miles north-eastward of Passage islet, has a least depth of 31 feet (9^m4) over it; Cygnet patch, with a least depth of 32 feet (9^m8), lies about 4 cables east-south-eastward of Melita patch. On the north-eastern side of the fairway, in this locality, are several detached patches north-eastward of Passage islet. Caution is necessary when navigating in this vicinity. 5

Bream patches, with a least depth of 41 feet (12^m5), and Bonito patches, with a least depth of 33 feet (10^m1), lie within a distance of from three-quarters of a mile to $8\frac{1}{2}$ miles south-westward and westward of Talla Talla Saghīr. 10

Talla Talla Saghīr, an island, the north-eastern side of which is situated about 8 miles west-south-westward of Talla Talla Kebir, consists of raised coral, cliffy on its south-western side but sandy and sloping on its north-eastern; the summit of the island (*Lat.* 18° 47' N., *Long.* 38° 00' E.) is bare, and there is a cairn 5 cables northward of it. The island is fringed by a coral reef, and a shallow bank extends to as much as about 6 cables from its western side; at the western edge of this bank are two shoals, with depths of 17 and 18 feet (5^m2 and 5^m5) over them, respectively. 20

Meteor shoal, with a least depth of 38 feet (11^m6) over it, lies about 5 miles southward of Talla Talla Saghīr.

Barracouta shoal, with a least depth of $5\frac{1}{2}$ fathoms (10^m1) over it, Cavally shoal, with a least depth of 5 fathoms (9^m1), and a shoal, with a least depth of 3 fathoms (5^m5), lie about $6\frac{1}{2}$, $9\frac{1}{2}$ and 11 miles, respectively, south-eastward of the south-eastern extremity of Talla Talla Saghīr. 25

The Inner channel on this side of the Red sea is continued in Canale Nord di Massaua, *see* page 249.

Chart 81.

Currents.—The currents in the southern approach to Suākin are extremely variable and sometimes strong; caution is necessary, and the approach should be timed so as to have broad daylight before any of the islets and dangers are approached. 30

Between December, 1930, and April, 1931, little current was experienced and the rate seldom exceeded a quarter of a knot. There appears to be a fairly constant set westward and north-westward at this season; it is probably influenced by the southerly winds prevailing in this part of the Red sea. 35

Charts 14, plan of Mersa Sheikh Ibrahim; 81.

Anchorage and inlets in Inner channel.—Marsa Sheikh Ibrāhīm, the entrance to which is situated about 16 miles south-south-eastward of the entrance to Suākin, is formed by a break in the coastal reef; the coastal reef, on either hand, dries in patches. 40

On the north-western shore of the inlet are some high mangroves; the south-western shore is low and sandy; a plain extends some miles inland and is covered with scrub. 45

A shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, was reported, in 1922, to lie about three-quarters of a mile east-south-eastward of the entrance to Marsa Sheikh Ibrāhīm and about half a mile from the coastal reef; the position of this shoal is approximate. 50

In 1931, the salient points on the reefs bordering the entrance channel were marked by steel rails, surmounted by black and white drums on the port hand and by red drums on the starboard hand.

Charts 81, 8c, 2523.

Charts 14, plan of Mersa Sheikh Ibrahim ; 81.

There is anchorage in depths of from $4\frac{1}{2}$ to 6 fathoms (8^m2 to 11^m0), good holding ground, about one cable south-westward of Cairn point, which is situated on the northern side of the inlet, about $7\frac{1}{2}$ cables within its entrance.

A vessel should approach with the summit of Jebel Gumberit in line with a notch in the distant hills, bearing 271° , which leads to the entrance ; she should then keep in mid-channel. See view facing this page.

10 Chart 81, with plan of Marsa Sheikh Sa'd.

Marsa Sheikh Sa'd (Lat. $18^\circ 49' N.$, Long. $37^\circ 26' E.$), the entrance to which is situated about 3 miles south-south-eastward of the entrance to Marsa Sheikh Ibrāhīm, is formed by a break in the coastal reef, extending about 2 miles north-north-westward inside the reef.

- 15 The entrance is partly obstructed by shoals which can be seen in favourable circumstances. The outer shoal is a coral head, with a depth of 6 feet (1^m8) over it, which is not easily seen, but which can be avoided by keeping close to the coral reef forming the northern side of the entrance, which dries in patches ; this latter reef is steep-to and
- 20 clearly visible under all conditions of light.

There is no good landing place as the depths decrease gradually and boats ground about 50 yards (45^m7) offshore. The country in this vicinity is thickly covered with brushwood. Ariel, gazelle, pigeons, and sand grouse are plentiful in the summer.

- 25 In 1924, there were beacons consisting of iron rails about 3 feet (0^m9) in height marking the entrance, one on each side ; these are visible from a distance of 2 miles under favourable conditions.

There is room for a short vessel to lie at anchor, with excellent shelter, just inside the entrance, but farther in a stern anchor must be

30 laid out. In 1924, H.M.S. *Clematis* anchored $1\frac{1}{2}$ cables 157° from the rock lying $1\frac{1}{2}$ cables westward of the beacon on the northern side of the entrance, and found ample swinging room, with one shackle of cable.

Vessels approaching Marsa Sheikh Sa'd from northward should keep the coastal reef aboard, avoiding projections. The area eastward of

35 this inlet has not been examined, and in it many patches of discoloured water have been observed.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

There is anchorage, in a depth of 10 fathoms (18^m3), mud, sheltered from all except south-easterly winds, southward of Qad Hogit, with

40 the beacon bearing 018° , distant 4 cables.

Chart 675, plan of Shubuk channel.

There is anchorage, in depths of from 6 to 9 fathoms (11^m0 to 16^m5), in Sumar inlet.

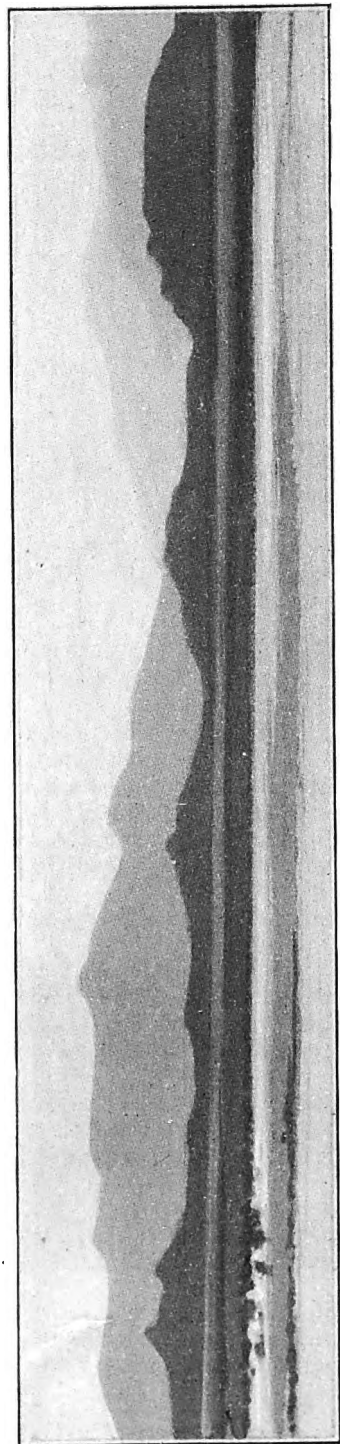
Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

- 45 There is anchorage, in depths of from 17 to 20 fathoms (31^m1 to 36^m6), mud, off the south-eastern end of Talla Talla Saghīr ; or, in a depth of 10 fathoms (18^m3), good holding ground, about 2 or 3 cables off the reef bordering the southern side of this island. During easterly winds, fairly good anchorage can be obtained off the western end of
- 50 this island, but the depth should not be shoaled to less than 15 fathoms (27^m4).

In 1935, H.M.S. *Weston* reported that anchorage was obtainable, in depths of from 3 to 6 fathoms (5^m5 to 11^m0), off the north-western end of the island ; a prominent cairn, situated near the north-western

Tároui hill.

Gumberti, bearing 271°.



View, in two parts, of entrance to Marsa Sheikh Ibrāhīm.
Original dated 1896.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

extremity of the island, bearing not less than 105° , leads northward of the shoal, with a depth of 18 feet (5^m5), off the western side of this island; the holding ground was not good, being coral and rock.

Charts 675, plans of Marsa Maqdam to Talla Talla Kebir and Shubuk channel; 81

Channel south-westward of Sha'ab el Shubuk.—Beacons.—

The channel within Sha'ab el Shubuk (*Lat. $18^\circ 50' N.$, Long. $37^\circ 30' E.$*) is reported to be an excellent channel for small craft with local knowledge in heavy weather, and is indicated by a pecked line on the charts; it is used principally by tugs towing barges to and from Trinkitat; nothing is gained in distance by using it, as compared with the channel outside Sha'ab el Shubuk. H.M.S. *Weston*, in 1935, passed through this passage without experiencing any serious difficulties.

The north-eastern side of this channel is formed by the western and southern sides of Sha'ab el Shubuk, and is marked by beacons each consisting of a concrete base with staff and topmark, which are maintained by the Port officer, Port Sudan; the south-western side of this channel is formed by the coastal reef, and is marked by similar beacons. The two northern beacons, situated three-quarters of a mile south-eastward of Marsa Sheikh Sa'd, in line bearing about 186° , lead from northward into this channel.

Sandhills point, on the mainland, about $3\frac{1}{2}$ miles south-westward of Sumar islet, has several sandhills on it; reefs extend about 5 miles west-north-westward and 2 miles north-eastward of this point, and Baraka island lies in the bight south-westward of it.

This channel trends southward from the Inner channel south-westward of South-East reef and passes between the coastal reef and the north-western and western sides of Sha'ab el Shubuk, and thence between the southern side of the south-eastern part of Sha'ab el Shubuk and the reefs lying west-north-westward and north-eastward of Sandhills point; from southward of Sumar islet the track passes between the reefs extending about one mile north-north-eastward of Melita point, the western entrance point of Marsa Maqdam, and the shoal water extending about 5 cables southward of the southern extremity of Sumar islet, into Marsa Maqdam.

A masonry beacon marks the north-eastern edge of the reef extending north-north-eastward of Melita point.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

Marsa Maqdam.—Marsa Maqdam lies between the south-eastern part of Sha'ab el Shubuk and the coast between Melita point and Ras Maqdam; Ras Maqdam is low and is backed by conspicuous sandhills.

Melita point attains an elevation of from 10 to 15 feet (3^m0 to 4^m6) and is covered with scrub; reefs extend to a distance of about one mile north-north-eastward, east-north-eastward and east-south-eastward of this point.

Islets and dangers.—On the reef extending north-north-eastward of Melita point, about 3 cables within its edge, are some islets; Eagle islet lies on the reef extending east-south-eastward of this point, about $3\frac{1}{2}$ cables from the point.

Maqdam patches, lying within a distance of about $1\frac{1}{2}$ miles northward and eastward of Ras Maqdam, consist of several detached reefs and patches; there are three islets lying on the western part of these

Charts 81, 8c, 2523.

Chart 675, plan of Marsa Maqdam to Talla Talla Kebir.

patches, and about 4 cables eastward of these islets are two shoals, each with a depth of 18 feet (5^m5) over it, and one shoal, over which the sea breaks, having a depth of 7 feet (2^m1); another shoal, the south-easternmost of the Maqdam patches, with a depth of 7 feet (2^m1), lies about 8 cables south-south-eastward of the shoal just described and 5 cables offshore.

Rambler shoal, situated about 1½ miles east-north-eastward of Ras Maqdam (*Lat. 18° 43' N., Long. 37° 44' E.*), has a least depth of 18 feet (5^m5), coral, over it; Fairway patch, lying about one mile south-eastward of Rambler shoal and about 1½ miles offshore, has a depth of 26 feet (7^m9), coral.

Anchorage.—Directions.—Marsa Maqdam affords capacious anchorage, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), sand and mud, in its northern and north-western parts, under the lee of Sha'ab el Shubuk; its south-eastern part should be avoided owing to the shoals lying northward and north-eastward of Ras Maqdam.

Eagle anchorage, in the south-western part of Marsa Maqdam, affords good anchorage, in depths of about 5 fathoms (9^m1), sand, 1½ miles south-eastward of the beacon off Melita point, but during easterly and south-easterly winds this anchorage is somewhat exposed to the swell.

Vessels approaching this harbour from eastward should pass 4 cables southward of the beacon marking the south-eastern extremity of Sha'ab el Shubuk, and thence proceed to an anchorage, according to the weather.

Chart 675, plans of Trinkitat harbour and Marsa Maqdam to Talla Talla Kebir.

Trinkitat harbour.—The entrance to Trinkitat harbour, which is not easily distinguished, as the coast is low and sandy in the vicinity, is situated about 2 miles south-eastward of Ras Maqdam; the fairway, which is about one cable wide, lies between a bank, with depths of less than 3 fathoms (5^m5) over it, extending about 1½ cables south-eastward of the northern entrance point, and a shallow spit extending about 3 cables northward of South point.

Chart 675, plan of Trinkitat harbour.

The harbour is open north-eastward but is protected to a large extent by Qita' Kanāsha, a reef lying off the entrance; it can accommodate about 20 vessels of from 18 to 21 feet (5^m5 to 6^m4) draught, with good holding ground. In 1931, a considerable amount of silting was taking place at the head of this harbour, and appeared to consist of a solid encroachment of the land.

The shores of the harbour are sandy, with low bushes, and a sandy plain, flooded at times, extends some distance inland. An opening in the south-eastern side leads into a large shallow lagoon.

A conspicuous building with a red roof, situated on the southern side of the harbour, about 5 cables south-south-westward of South point, is a good landmark.

Dangers.—Beacons.—Qita' Kanāsha, the northern end of which lies about 6 cables east-north-eastward of the northern entrance point of the harbour, is nearly awash, always visible, steep-to, and is a good mark for vessels making Trinkitat harbour; an iron beacon, surmounted by a staff and can, 10 feet (3^m0) in height, stands near the northern end of this reef.

Chart 675, plan of Trinkitat harbour.

Tokar shoal, lying in the entrance to the harbour, about 3 cables south-eastward of the northern entrance point of the harbour, has a least depth of 19 feet (5^m8) over it.

Entrance rock, over which the sea sometimes breaks, lying near the centre of the shallow spit extending northward of South point, has a depth of less than 6 feet (1^m8) over it; another rock, over which the sea breaks, with a depth of less than 6 feet (1^m8), lies about one cable north-north-westward of South point (*Lat.* 18° 41' N., *Long.* 37° 45' E.).

Two pole beacons, the front beacon painted red and surmounted by a triangle, point down, 25 feet (7^m6) in height, and the rear beacon painted white and surmounted by a triangle, 18 feet (5^m5) in height, stand, 120 yards (109^m7) apart, on the western side of the harbour.

Anchorage.—There is good anchorage, in depths of about 6 fathoms (11^m0), outside the harbour, westward of Qita' Kanāsha, sheltered from easterly winds.

Piers.—**Buoy.**—There is a pier with a T head, 30 yards (27^m4) long, with a least depth of 11 feet (3^m4) alongside, on the southern shore of the harbour; there is a hauling-off buoy off this pierhead. There are also two small piers, with depths of 7 feet (2^m1) alongside their heads, about one cable farther eastward.

Chart 675, plans of Trinkitat harbour and Marsa Maqdam to Talla Talla Kebir.

Directions.—A vessel approaching Trinkitat harbour from northward should bring the western extremity of South point in line with the conspicuous red-roofed building mentioned above, bearing 195°, which leads between Rambler shoal and Fairway patch and about 3 cables eastward of the south-easternmost of the Maqdam patches and 1½ cables westward of Qita' Kanāsha; when eastward of northern entrance point course should be altered to bring the two pole beacons on the western shore of the harbour in line, bearing 232°, which leads through the fairway in a least depth of 25 feet (7^m6). After passing north-westward of the spit extending northward of South point a vessel should alter course for the head of the harbour and anchor as convenient. If the beacons on the western shore are not in position the channel should be buoyed before attempting to enter.

Charts 675, plan of Trinkitat harbour; 81.

Communications.—There is railway communication during the cotton season between Trinkitat and Tokar, the cotton centre of the district, about 13 miles southward.

Trinkitat is connected with the general telegraph and telephone systems.

Winds and weather.—From November to April the winds are mainly northerly, with some north-easterly ones, especially during the daytime. In April the wind begins to veer through east towards south. From June to September winds are mainly southerly. In this latter season sandstorms are said to be frequent and severe in the Tokar and Trinkitat district. During and after these storms visibility on the coast and at sea is likely to be much reduced by sand or dust haze. There is no dust haze with northerly and easterly winds, and only occasional and very slight dust with winds from East to S.E. South-easterly winds can usually be forecast by an increase in the humidity of the atmosphere; it is said that a swell sets

Charts 675, plan of Trinkitat harbour ; 81.

in from south-eastward from 12 to 24 hours before the shift of wind occurs. Strong northerly winds are occasionally preceded by a swell from that direction, but, as the islets and reefs of the Suākin group act
5 as a breakwater, a marked swell is not always an accompaniment to a strong northerly wind.

H.M.S. *Penzance* reported, in 1904, that during the winter months, September to April, the wind at Trinkitat (*Lat. 18° 41' N., Long. 37° 45' E.*) blows fairly constantly from North or N.E., accompanied
10 by sandstorms and blowing strongest in February and March.

During the summer months the wind blows from southward down the delta of the Baraka river, bringing with it much sand and blowing strongest in June and July when the whole delta from Tokar to Trinkitat is rendered almost uninhabitable by sandstorms which often
15 blow for a considerable distance out to sea.

Chart 8d.

SOUTH POINT TO RAS KASAR.—Aspect.—From South point the coast trends about $27\frac{1}{2}$ miles south-eastward to Ras Asis and is low and barren, with salt-water swamps and in places covered
20 with bushes. There are a few low sandhills on the coast about 12 miles from Trinkitat. See also page 205.

Charts 8c, 8d.

Outlying islets and dangers.—Light.—Cavally shoal, lying about 23 miles eastward of South point, and the islands and dangers
25 north-westward, northward, and north-eastward of this shoal, also the shoal, with a depth of 3 fathoms (5^m5) over it, about $1\frac{1}{2}$ miles south-eastward of Cavally shoal, are described on pages 217 and 213.

Chart 8d.

Dahrat Asis (Dar-ah-Teras) islet, situated about 27 miles eastward
30 of South point, is low and sandy ; a reef extends about half a mile north-north-westward of its northern end. A reef, on which, in 1936, a sand cay had formed, lies about one mile eastward of this islet, and shoal water, with depths of less than 10 fathoms (18^m3), extends about $1\frac{1}{2}$ miles south-south-eastward of this reef. An 8-fathom (14^m6) patch
35 lies about $6\frac{1}{2}$ miles east-south-eastward of Dahrat Asis islet. This locality has not been examined and should be avoided.

Chart 8c, 8d.

Masamirit (Masamahru) islet and Karam Masamirit (Karam Masamahru) islet, about 2 miles south-south-eastward, lie on the eastern
40 side of the Suākin group, about 59 miles eastward of South point ; Masamirit and Karam Masamirit islets are low, composed of sand and coral with bushes on them, and are steep-to ; there is a light-structure on Masamirit islet. Loka (Lokhah), an islet situated about $5\frac{1}{2}$ miles westward of Masamirit islet, is low, composed of coral, and fringed by
45 a reef ; Sha'ab Loka (Shab Lokhah), about $8\frac{1}{2}$ miles south-westward of Loka, has a depth of less than 6 feet (1^m8), over which the sea breaks.

A light is exhibited, at an elevation of 86 feet (26^m2), from a red steel framework structure, situated on the eastern side of Masamirit islet.

Chart 8d.

50 A shoal, the position of which is doubtful, was reported, in 1929, to lie about 10 miles south-south-westward of Karam Masamirit islet. Dōm esh Sheikh islet, situated about $11\frac{1}{2}$ miles south-south-eastward of Karam Masamirit islet, is the easternmost islet of the Suākin group ;

Charts 8c, 8d, 2523.

Chart 8d.

it is low, thinly covered with bush, and fringed by a reef which extends about half a mile westward of it. Ghab Abi 'Isa islet (*Lat. 18° 36' N., Long. 38° 47' E.*) lies about $3\frac{1}{2}$ miles west-south-westward of Dōm esh Sheikh islet ; a reef, awash, lies about $1\frac{1}{2}$ miles east-south-eastward of Ghab Abi 'Isa islet, and Abu 'Isa (Isa Abi), an islet about 3 miles south-westward of Ghab Abi 'Isa islet, is fringed by a reef. 5

Dahrat ed Dakhīla islet, lying about $2\frac{1}{2}$ miles south-south-eastward of Ghab Abi 'Isa islet, is bordered by a reef, and $1\frac{1}{2}$ miles eastward of it lies a coral reef, apparently steep-to, with a depth of 6 feet (1^m8) 10 over its northern end, where the sea occasionally breaks over it.

Dahrat Ghab (Dhā-l ghāb), an islet about 4 miles west-south-westward of Abi 'Isa, is fringed by a reef.

Ghab Miyūn islet, lying about $3\frac{1}{2}$ miles south-eastward of Dahrat ed Dakhīla islet, is fringed by a reef, and was reported, in 1930, to lie 15 about one mile north-eastward of its charted position ; a reef, with a depth of less than 6 feet (1^m8) over it, lies from about one to $3\frac{1}{2}$ miles eastward of Ghab Miyūn islet. Miyūn, an islet about 2 miles west-south-westward of Ghab Miyūn islet, is fringed by a reef and was reported, in 1930, to lie about one mile eastward of its charted position. 20

Darraka (Derraka) is an islet about 4 miles west-south-westward of Miyūn ; it is bordered by a reef, and about one mile north-westward of it is a reef, over which the sea breaks ; the reef bordering Darraka appears to extend some distance towards this detached reef. This islet was reported, in 1930, to lie about one mile eastward of its charted 25 position.

Safīna (Safīnat) shoal, lying about $4\frac{1}{2}$ miles southward of Miyūn, has a depth of one fathom (1^m8) over it.

Dahrat 'Abīd islet, the southernmost of the Suākin group, is situated about $6\frac{1}{2}$ miles south-south-eastward of Darraka ; it is low, composed 30 of sand and coral, and is uninhabited. It was reported, in 1939, that a reef extends about half a mile from the eastern extremity of this islet.

'Aqrab islets, Karb islets, and Abu Marina are a group of six sand and coral islets, over which the sea breaks when there is any swell, situated 35 on a coral reef, on which lie some pinnacle coral rocks, with deep water between. 'Aqrab islets are the three northern ; Karb islets the two southern, and Abu Marina the eastern islet. The latter islet lies about $11\frac{1}{2}$ miles westward of Darraka.

A shoal, with a depth of 6 fathoms (11^m0) over it, which has not been 40 examined, was reported, in 1929, to lie about 3 miles northward of the northern 'Aqrab islet.

A bank, lying about 5 miles southward of Abu Marina, is steep-to and has depths of from 5 to 12 fathoms (9^m1 to 21^m9) over it ; it is probably an extension of the coral reef close north-westward of it. 45 A $2\frac{1}{2}$ -fathom (4^m6) patch was reported, in 1911, to lie on a rocky bank with depths of less than 10 fathoms (18^m3), situated close westward of the bank just described.

Charts 8c, 8d.

Currents.—See page 217.

50

Charts 81, 8c, 8d.

Anchorage.—As a rule the water is smooth inside the islets of the Suākin group, and anchorage can be obtained, in depths of from 10 to 25 fathoms (18^m3 to 45^m7), generally between them and the coast,

Chart 2523.

Chart 81, 8c, 8d.

from Ras Maqdam (page 219) to Ras Shakal (Shekub), the latter point situated about 11 miles south-eastward of Ras Asis (*Lat. 18° 25' N., Long. 38° 09' E.*).

5 *Charts 8c, 8d.*

There is anchorage for small craft, sheltered from all except south-easterly winds, at Sha'ab Loka. The entrance is intricate, and should not be attempted without local knowledge; the least depth, in 1930, was 3 fathoms (5^m5).

10 *Chart 81.*

Coast.—Dangers.—Beacon.—Anchorage.—Qita' Teronbo, lying about 3 miles south-eastward of South point, is a rocky patch with a depth of less than 6 feet (1^m8) over it and steep to on its north-eastern side; between it and the coast there is a channel about 2 cables wide, 15 with depths of 3½ fathoms (6^m4), in which anchorage may be obtained in case of emergency.

Chart 8d.

About 3½ miles northward of Ras Asis and 2½ miles offshore the depths are uneven; a shoal, with a depth of 4 fathoms (7^m3) over it, 20 lies about 2 miles north-north-eastward of Ras Asis.

Ras Asis is low and sandy; a conspicuous black iron framework beacon, surmounted by a diamond, 30 feet (9^m1) in height, stands on the eastern extremity of this cape; a rocky spit, with depths of less than 6 feet (1^m8) over it, extends about three-quarters of a mile east- 25 ward of it.

Charts 14, plan of Aqīq Saghir; 8d.

Gulf of 'Aqīq.—Beacon.—The Gulf of 'Aqīq is entered between Ras Asis and Ras Shakal; on the southern shore of this gulf, about 5½ miles south-westward of Ras Shakal is 'Aqīq village, consisting of 30 some huts, with a small landing jetty. The village is connected to the general telegraph system.

Chart 675, plan of Khor Nowarat.

Ras Shakal is a low sandy point formed by an island and two islets; a coral reef extends about 3 cables from its northern and eastern sides; 35 it should be passed in depths of not less than 30 fathoms (54^m9) or at a distance of not less than 4 miles.

A white masonry beacon, 16 feet (4^m9) in height, stands on the northern extremity of the reef extending northward of Ras Shakal; it was reported, in 1938, that this beacon was difficult to distinguish 40 against the sandy background.

Chart 8d.

Islands and dangers.—Anchorage.—Diamond shoal, lying about 4 miles north-westward of Ras Shakal beacon, has a least depth of 2½ fathoms (4^m1) over it; a shoal, with a depth of less than 6 feet (1^m8), 45 is situated about one mile north-north-westward of Diamond shoal.

'Amarāt islands, from about 2 to 4 miles westward of Ras Shakal beacon, lie on a coral reef, and are low and sandy with a few bushes on them; depths of 4 fathoms (7^m3) extend about 1½ miles north-north-eastward of the eastern end of the eastern island; a rock, with 50 a depth of less than 6 feet (1^m8) over it, is situated about one mile south-south-eastward of the southern end of this group. There is a passage to 'Aqīq between these islands and the south-eastern shore of the Gulf of 'Aqīq; it is only available for small vessels with local knowledge.

Charts 8c, 8d, 2523.

Chart 14, plan of Aqiq Saghir.

Three low coral islets lie within about $1\frac{1}{2}$ miles northward of 'Aqiq (Lat. $18^{\circ} 13' N.$, Long. $38^{\circ} 14' E.$); these islets, with the reefs bordering them, afford sheltered anchorage in depths of from $4\frac{1}{2}$ to 7 fathoms (8^m7 to 12^m8), mud and coral, eastward of the inner islet, and about $4\frac{1}{2}$ cables from the landing jetty. 5

Chart 8d.

A reef, with some islets on it, extends about one mile offshore from Barrat Dodam, a promontory at the head of the gulf, about 7 miles south-south-westward of Ras Asis. 10

Charts 675, plan of Khor Nowarat; 8d.

Khōr Nawarat.—Beacon.—Khōr Nawarat (Khor Nowarat) is entered between Ras Istahi, about 3 miles south-eastward of Ras Shakal, and Shatira islet, about 7 cables further south-eastward; the southern and western sides of this bay are bordered by reefs and 15 detached coral boulders. The shores of the bay are low and sandy and, in places, covered with scrub and fringed with mangroves; the land rises about $3\frac{1}{2}$ miles inland.

Chart 675, plan of Khor Nowarat.

A black iron pole beacon, surmounted by a white triangle, point 20 down, 11 feet (3^m4) in height, stands on the summit of a small sandhill, 15 feet (4^m6) high, about $9\frac{1}{2}$ cables west-north-westward of Ras Istahi.

Fawn cove, in the north-western corner of Khōr Nawarat, is encumbered with reefs; Bluff point, its southern entrance point, is 21 feet 25 (6^m4) high; there is a conspicuous sandhill, 38 feet (11^m6) high, $1\frac{1}{2}$ miles west-south-westward of Bluff point.

The best landing place is about 4 miles south-south-eastward of Bluff point, where the reefs afford shelter, and small boats can approach the beach. Adobana village, with a population of about 1,000, in 30 1931, lies about 2 miles westward of this landing place.

Fish abound near all the reefs, and ariel, gazelle, hares, ducks, quail, and sand-grouse are plentiful in the neighbourhood.

Winds and weather.—The mountains in this neighbourhood appear to receive a lot of rain, and are frequently hidden in clouds or 35 by sandstorms; the latter are of common occurrence and may last from one to possibly four days. Strong easterly and southerly winds, which at times reach a force of 8, are almost invariably preceded by a thick atmosphere, the hills disappear from view, and it is usually very humid. These winds often set in quickly and attain a considerable 40 force in a few minutes, but if the signs of their approach and the barometer are watched there is usually ample warning. Under these conditions the barometer tends to fall, the daily 1000 rise almost vanishing. As a rule the strength of the wind abates towards evening. These winds are known locally as "Habbubs," and are very hot and 45 usually accompanied by sandstorms.

Clearing hills and dry weather are the precursors of fine weather with light northerly breezes.

Chart 8d.

Aspect.—Jebel Tagdara (Tagdera), an isolated double hill, situated 50 about $10\frac{1}{2}$ miles west-south-westward of Ras Shakal (Lat. $18^{\circ} 18' N.$, Long. $38^{\circ} 17' E.$) and about $1\frac{1}{2}$ miles inland, is the northernmost of the coast hills in this vicinity and is easily identified; Jebel Debranka, 649 feet (197^m8) high, is a large rounded mass with a smooth summit,

Chart 8d.

about 5 miles south-eastward of Jebel Tagdara ; Quoin hill, standing on the low coastal plain, about $5\frac{1}{2}$ miles east-south-eastward of Jebel Debranka, has two distinct conical summits and bears little resemblance
 5 to a quoin ; Sugarloaf, about 6 miles south-eastward of Quoin hill and about the same distance inland, is the name given to two conical hills, about 830 feet (253^m0) high.

Jebel Hadārba, about $6\frac{1}{2}$ miles south-south-westward of Jebel Debranka and about 9 miles inland, is the summit of the inland range ;
 10 a conspicuous peak, with a rounded summit, about 1,800 feet (548^m6) high, about $5\frac{1}{2}$ miles south-westward of Sugarloaf, seldom stands out clearly, but is unmistakable.

Chart 675, plan of Khor Nowarat.

Islands and dangers.—A chain of low sand and coral islets fronts
 15 the entrance and completely shelters this bay ; these islets lie on coral reefs, and there are bushes on some of them. Guban islet, the north-westernmost of these islets, lies about 7 cables offshore south-eastward of Ras Shakal ; a bank, with depths of less than 5 fathoms (9^m1) over it, extends as much as $4\frac{1}{2}$ cables northward and 4 cables eastward of
 20 Guban islet ; Guban patches, with depths of 14 and 16 feet (4^m3 and 4^m9), respectively, over them, lie between Guban islet and the mainland.

Entrance shoals, lying from about 2 to 4 cables east-south-eastward and south-eastward of the south-eastern side of Guban islet, have a
 25 least depth of 3 fathoms (5^m5) over them.

Hagar (Hai Dugah) islets, three low sandy islets, sparsely covered with grass and scrub, lie on a reef, the north-western end of which is situated about 7 cables north-north-eastward of Ras Istahi ; this reef extends about $1\frac{3}{4}$ miles in a south-easterly direction and, Black rocks,
 30 which are conspicuous and composed of dark coral, are situated at its north-western end. A bank, with depths of less than 5 fathoms (9^m1) over it, extends about 4 cables north-westward of the north-western end of this reef.

From Ras Istahi, the north-western entrance point of Khōr Nawarat,
 35 a reef and shoal water, with depths of less than 3 fathoms (5^m5), extend about $2\frac{1}{2}$ cables in an east-south-easterly direction ; a shoal, with a depth of 3 fathoms (5^m5) over it, lies about 4 cables east-south-eastward of this point.

Charts 675, plan of Khor Nowarat ; 8d.

40 From about 7 cables south-eastward of Ras Istahi a reef, which connects with the mainland, extends about 5 miles south-eastward ; on this reef lie Shatira islet, Farrājīn (Farajin) island, and several islets south-eastward ; a spit, with a least depth of 10 feet (3^m0) over it, extends about 3 cables northward of the eastern end of Shatira islet,
 45 and a shoal, with a least depth of 3 feet (0^m9), lies about $1\frac{1}{4}$ cables westward of the western side of this islet. Bushy islet, the north-eastern point of which is situated about 7 cables southward of the north-western extremity of Farrājīn island (*Lat.* $18^\circ 15' N.$, *Long.* $38^\circ 20' E.$), is conspicuous, and is fringed by a reef.

50 Chart 675, plan of Khor Nowarat.

Bahdūr (Ibn Abbas) island, composed of coral rock, lies in the middle of the south-eastern part of Khōr Nawarat, with a conspicuous small fishing village at its western end ; the western part of this island is sandy and its eastern part wooded ; the southern part of the island

Chart 675, plan of Khor Nowarat.

is usually inundated. It is fringed by a reef, with foul ground between its eastern end and Farrājīn island.

Charts 675, plan of Khor Nowarat; 8d.

Directions.—Anchorages.—The entrance to Khōr Nawarat is difficult to distinguish from a distance. A vessel should approach with Black rocks, which are visible from a distance of over 5 miles, bearing 190°, until the beacon $9\frac{1}{4}$ cables west-north-westward of Ras Istahi bears 230°, when it should be steered for on that bearing until the vessel has passed south-eastward of Entrance shoals, when course should be altered to bring the sandspit extending from the south-western extremity of Guban islet in line with the white masonry beacon standing on the northern extremity of the reef extending northward of Ras Shakal, astern, bearing 312°, which leads towards the anchorage westward of the middle Hagar islet, where there is a depth of 7 fathoms (12^m8), sand. 5 10 15

If proceeding to one of the inner anchorages a vessel must take care to avoid the shoal water and the shoal with a depth of 3 fathoms (5^m5) east-south-eastward of Ras Istahi, then a south-westerly course should be steered, passing westward of the shoal $1\frac{1}{2}$ cables westward of Shatira islet, and anchor in a depth of about 5 fathoms (9^m1) about 9 cables south-westward of that islet, or she may continue south-westward and, giving the reef fringing the western end of Bahdūr island a prudent berth, anchor in a depth of 4 fathoms (7^m3), south-westward of the fishing village; the holding ground, sand and mud, is everywhere good. 20 25

In 1938, H.M.S. *Londonderry* anchored, in a depth of 6 fathoms (11^m0), with the beacon west-north-westward of Ras Istahi bearing 322°, distant about $2\frac{1}{4}$ miles.

East passage, between the south-eastern end of the reef on which lie the Hagar islets and the northern side of Farrājīn island, is convenient during northerly winds for small vessels; it has a least depth of 30 feet (9^m1) in the fairway. 30

The channel between the coast and the western side of Guban islet has a least depth of 27 feet (8^m2) in the fairway, but the coral patches in this channel restrict its use to the smallest vessels. 35

There is a boat channel, which can only be used with local knowledge, through the reef extending north-westward from Ras Farrājīn (Farajin), a promontory south-eastward of Bahdūr island, to the south-eastern end of Farrājīn island. 40

Chart 8d.

Coast.—Aspect.—Between the south-eastern extremity of Ras Farrājīn and Ras 'Abīd, about $4\frac{1}{2}$ miles eastward, there is a bay, which is divided into two parts by a peninsula, called Jezirat er Rīh.

From Ras 'Abīd (*Lat.* 18° 10' N., *Long.* 38° 29' E.) the coast, which is low, trends about $5\frac{1}{2}$ miles south-eastward to Ras Abu Yābis and thence a further $4\frac{1}{2}$ miles south-eastward to Ras Kasar; it is fringed by a rocky bank, which at Ras Kasar extends $1\frac{1}{2}$ miles offshore. The frontier between the Anglo-Egyptian Sudan and Eritrea reaches the coast at Ras Kasar. 45 50

The aspect of this part of the coast is described on pages 225-226.

Off-lying dangers.—A shoal, with a depth of 5 fathoms (9^m1) over it, lies about $1\frac{1}{2}$ miles eastward of Ras 'Abīd.

A bank, with a least depth of 17 fathoms (31^m1), was reported, in

Charts 8d, 2523.

Chart 8d.

1917, about 5 miles eastward of Ras 'Abīd. In 1904, the S.S. *Gulf of Trinidad*, drawing 23 feet (7^m0), reported touching lightly on a reef situated about 5½ miles eastward of Ras Abu Yābis, near the southern end of a bank charted in this position; this reef has been unsuccessfully searched for and its position is doubtful.

On account of the shoal water and the danger described above vessels should not approach Jezirat er Rīh from eastward.

Coast.—Islets and dangers.—The bight westward of Jezirat er Rīh has depths of 2 fathoms (3^m7) in the entrance over a bar formed by a continuation of the coastal reef, and depths of from 3 to 4 fathoms (5^m5 to 7^m3), mud, further in. A vessel wishing to enter it should pass between the south-eastern extremity of Ras Farrājīn and the north-western extremity of Jezirat er Rīh; a tortuous channel, only available for small vessels with local knowledge, leads towards the head of this bay. A vessel making the coast in this vicinity is recommended to make Dahrat 'Abīd islet.

The highest part of Jezirat er Rīh consists of a mound of ruins; on its north-western part are some trees and other vegetation, also the coral rock ruins of the ancient *Ptolemais Theron*; the eastern part of this peninsula is low and sandy.

Ras 'Abīd is sandy, with its summit on its eastern side; the inlet on the western side of Ras 'Abīd has depths of from one to 3 fathoms (1^m8 to 5^m5), and affords shelter to small craft with local knowledge.

Ras Abu Yābis is low and bushy, with small white sandhills; southward of this cape, and near the coast, are some conspicuous summits.

Seil Bahr is a rocky islet, 6 feet (1^m8) high, lying close offshore, about one mile north-westward of Ras Abu Yābis; it is a good landmark, and north-westward of it lies a low bushy islet.

Ras Kasar (*Lat. 18° 02' N., Long. 38° 35' E.*) is low, with sparse vegetation, and is not easily identified from a distance; for some distance northward the coast is covered with bushes.

Chart 2523.

CHAPTER VI

WESTERN SIDE OF THE RED SEA, FROM RAS KASAR TO RAS DARMA

Charts 8d, 8e.

ASPECT.—The coast of Eritrea, which extends from Ras Kasar to Ras Dumeira (page 137), borders the Abyssinian highlands, but is generally low and arid, gradually rising through a distance of about 40 miles to the first of the three series of plateaux of Abyssinia. 5 These mountains have generally a peculiarly abrupt and precipitous appearance.

Chart 8d.

The Inner channel on this side of the Red sea is continued in Canale Nord di Massaua and Canale Sud di Massaua lying westward and 10 south-westward of the islands and dangers on Banco Dahlach (Dahlak bank), which fronts the greater part of the Eritrean coast.

The coast from Ras Kasar to Porto di Massaua, about 153 miles south-south-eastward, is, except for Taclai light-tower and factory, almost devoid of easily identifiable landmarks. The bight, on the 15 southern side of Ras Kasar, is bordered by trees, and dhows are usually anchored close to the edge of the coastal reef. Samadrisat, about 28 miles south-south-eastward of Ras Kasar, is more easily identified than any other part of the coast, as it is covered with high trees, extending about one mile along the coast, and there are no other trees 20 for 20 miles northward and southward of it.

From the vicinity of Ganadà, a promontory $7\frac{1}{2}$ miles south-south-eastward of Ras Kasar, a chain of hills, about 4 miles inland, trends parallel to the coast and affords a good landmark. Middit, a hill about 8 miles south-south-westward of the eastern extremity of 25 Ganadà, has two summits, and is conspicuous from a distance; a circular stone tomb stands on the southern summit. Abghendabù, about 8 miles south-south-eastward of Middit, has a conspicuous stone tomb on its southernmost ridge. Noh-rat, about $5\frac{1}{2}$ miles south-south-eastward of Abghendabù, is a rugged ridge of hills rising towards 30 its southern end, where it terminates in a blunt. Scenat (*Lat. $17^{\circ} 31' N.$, Long. $38^{\circ} 45' E.$*), $5\frac{1}{2}$ miles south-south-eastward of Noh-rat, resembles a fort and is conspicuous; from a distance it appears isolated and is easy to identify.

From Scenat the land slopes downwards to the coast, and is covered 35 by marshy woods, interspersed with numerous sand dunes.

Chart 2523.

1*

Chart 8d.

About midway between Scenat and Tep-sa, a group of hills $5\frac{1}{2}$ miles south-south-eastward, is an isolated cone-shaped dune, which is conspicuous from seaward.

- 5 Tep-sa has a whitish colour, and its highest peak is at its northern end; at sunrise it has the appearance of being a white mass with dark rocky hills at either end, but when the sun is behind this group of hills three conspicuous peaks are visible at its southern end.

- 10 Monte Baeki (North Bluff), situated about 6 miles south-eastward of Tep-sa and $4\frac{1}{2}$ miles inland, has a beacon standing on its northern shoulder; this beacon is pyramidal-shaped, on a triangular base, surmounted by a white hexagonal parapet and a staff, 30 feet (9^m1) in height, the lower part painted black and the upper part black and white chequers.

- 15 Several of the hills in the vicinity of Monte Baeki have conspicuous cairns on their summits, but the beacon on Monte Baeki is quite unmistakable.

Quarantine.—See page 4.

Charts 8d, 8e.

- 20 **Local weather.**—See page 39.

Chart 8d.

RAS KASAR TO TACLAI.—Coast.—Dangers.—Light.—Beacons.—From Ras Kasar the coast trends about 25 miles south-south-eastward to Taclai and is fringed with a reef.

- 25 Depths of less than 100 fathoms (182^m9) will be found off this stretch of coast at a distance of from 5 to 11 miles offshore; between these depths and the coastal reef the bottom is very irregular, and there are two deeps, with depths of over 100 fathoms (182^m9), the northern extending about 9 miles south-south-eastward from a position $1\frac{1}{2}$ miles
30 east-south-eastward of Ras Kasar, and the southern from about 12 to 27 miles south-eastward of that cape.

- The bight on the southern side of Ras Kasar is about 2 miles wide, with a village standing on its shores. The coastal reef in this locality extends about one mile offshore, in places, and the sea breaks over
35 it; outside it are depths of from 3 to 4 fathoms (5^m5 to 7^m3), where dhows anchor. The coast in this vicinity is low, sandy, and backed by high land.

- A shoal, with a depth of 3 fathoms (5^m5) over it, lies about $2\frac{1}{2}$ miles southward of Ras Kasar (*Lat.* $18^\circ 02' N.$, *Long.* $38^\circ 35' E.$) and $1\frac{1}{2}$ miles
40 offshore; a rock, with a depth of less than 6 feet (1^m8), lies about one mile farther southward and one mile offshore.

The promontory of Ganadà can be identified by a number of sand dunes, about 30 feet (9^m1) high; there are a few huts on the coast here.

- Hasmet, with a very small bay between the points of the coastal
45 reef where boats anchor, lies 19 miles south-eastward of Ras Kasar. The coast in this neighbourhood is low, swampy, and backed by high land; a little within the beach lies a salt plain.

Samadrisat (page 229) is a low projecting point.

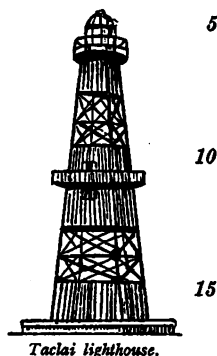
- At Taclai there is a factory, a conspicuous brick building of one
50 storey with a small tower in the centre, about 49 feet (15^m0) in height, painted in black and white squares, and surrounded by four smaller symmetrically disposed buildings of one storey; a little farther inland there are two small buildings and some huts.

Chart 2523.

Chart 8d.

A light is exhibited, at an elevation of 89 feet (27^m1), from a grey iron framework tower, 69 feet (21^m0) in height, situated on a low sand hillock close southward of Taclai factory.

About 2 miles northward of Taclai is Marsa Taclai, a small boat harbour. A mole, in a ruinous condition, extends about 142 yards (129^m8) eastward from the shore, and looks like a reef; near its extremity stands a truncated cone pillar, surmounted by a staff. Another mole, in rather better condition, extends about 110 yards (100^m6) north-north-eastward from the shore, leaving an entrance about 50 feet (15^m2) wide with a depth of 8 feet (2^m5) in it, between the heads of the moles. The north-western part of the latter mole is the quay, with a depth of 7½ feet (2^m3) alongside, and a small flight of stone steps, at which boats can unload. The depth in the centre of the harbour is 9 feet (2^m7), decreasing towards the shore, but a large part of the moles is on dry land. This harbour serves as a shelter for local native craft. There are two masonry buildings and a few huts a little southward of the harbour.



A sandy shoal, the existence of which is doubtful, was reported, in 1938, to lie about 5 miles south-eastward of Taclai and about 1½ miles offshore.

A black pyramidal masonry beacon, with a white horizontal band, 10 feet (3^m0) in height, stands close to the coast about 10 miles south-south-eastward of Taclai light-tower (*Lat. 17° 31' N., Long. 38° 52' E.*)

A white pyramidal masonry beacon, 10 feet (3^m0) in height, which was reported, in 1935, to be partly in ruins, but still plainly visible, stands close to the coast about 2½ miles southward of the beacon just described.

Off-lying banks and shoal.—Several banks, with depths of from 6½ to 10 fathoms (11^m9 to 18^m3) over them, lie within 12 miles of this stretch of coast.

A shoal, with a least depth of 4½ fathoms (8^m7) over it, lies about 13 miles east-north-eastward of Taclai and 11½ miles offshore.

Charts 164, 8d.

CANALE DI MASSAUA.—Canale di Massaua lies between the coast of Eritrea from eastward of Monte Baeki to Sha'ab Shakhs, about 205 miles south-south-eastward, to westward and south-westward, and Banco Dahlach, to eastward and north-eastward.

It is divided into Canale Nord di Massaua and Canale Sud di Massaua; these channels afford a safe and convenient passage, which, being lighted, may be navigated at night, but much caution is necessary, as the islands are low, steep-to, and not easily seen.

Aspect.—The character of the Abyssinian mountains is the same throughout the channel; flat tablelands prevail, with their axes trending northward and southward, but here and there sharp peaks break the line and are good landmarks when they can be identified. A broad sandy plain, rising gently from the coast, extends from 15 to 20 miles to the base of these ranges, where it attains an elevation of 1,000 feet (304^m8). The plain is dotted with small hills, generally conical in shape, the elevations of which are much dwarfed in appear-

Charts 164, 8d.

ance by the mountains farther inland, and by the almost imperceptible slope of the plain; this must be borne in mind when attempting to identify these hills from the chart.

- 5 **Currents.**—The direction of the currents in Canale di Massaua is very variable. In January and February the south-easterly winds in the middle of the Red sea are strongest, and cause a southerly surface current along the shore of the channel, much influenced, however, by the local winds in the channel and by the tidal streams. In Canale
10 Sud di Massaua, during January and February, southerly currents have been observed to prevail against southerly winds, but in March and April the current usually sets northward. It seems, however, to be much governed by local winds, and, off Ras Kasar, during the latter month, in 1877, after five days' continuous south-easterly wind, it was
15 found to be setting north-westward at a rate of $1\frac{1}{2}$ knots.

- Winds and weather.**—In Canale Nord di Massaua (*Lat.* $16^{\circ} 58' N.$, *Long.* $39^{\circ} 02' E.$) northerly winds prevail and are stronger during the day than at night; they blow rather off the land in the morning and veer north-eastward during the day. A low barometer (about 1009
20 to 1013 millibars) is commonly followed, about two days afterwards, by a northerly wind, which sometimes sets in suddenly and fresh, at other times gradually; in both cases it is preceded by light clouds. The barometer rises and remains high as long as the wind lasts.

- When southerly winds blow throughout the channel they generally
25 continue during the night, blowing strongly from south-eastward by day and veering north-westward and falling lighter at night. So long as the wind is from south-westward it is remarkably dry, but when it shifts southward or south-eastward the wet bulb thermometer quickly rises several degrees; this strong southerly wind seldom lasts more
30 than four days. The barometer gives no warning, but falls as soon as the wind commences.

- In Canale Sud di Massaua southerly winds prevail and cause a considerable swell, which is experienced southward of and near Sciumma (Shumma), an island about 29 miles eastward of Massaua, even when
35 the wind does not blow home. The remarks as to the shifting of the wind in Canale Nord di Massaua apply equally here.

- The wind is frequently south-easterly and fresh southward of Sciumma, whilst it is northerly off Harat and Difnein, two islands lying about 28 and 61 miles, respectively, northward of Massaua.

- 40 Off Massaua the sea breeze is generally from eastward.

- BANCO DAHLACH.**—**General remarks.**—From a position about 36 miles east-south-eastward of Taclai, Banco Dahlach extends about 183 miles south-eastward to and including Seven Fathom banks, and its outer edge lies from about 30 to 80 miles offshore. The islands
45 on Banco Dahlach are principally composed of coral and are bordered by reefs; the channels between them have moderate depths and are encumbered with shoals.

Chart 164.

- There is only one channel across this bank, and this channel, which
50 is described on page 240, is entered from seaward between Harmil and Entaentor; the island of Harmil lies about 60 miles south-eastward from the north-western extremity of Banco Dahlach, and the island of Entaentor about $9\frac{1}{2}$ miles further south-eastward.

Charts 8d, 2523.

Chart 164.

Caution.—Banco Dahlach (*Lat. 16° 00' N., Long. 40° 00' E.*) is principally sand and coral, with occasional patches of mud. From the nature of the bottom there is a great probability of the existence of many shoals not marked on the chart; great caution is, therefore, required when navigating in this vicinity, for although the coral shoals, if large in extent, are sometimes visible, those of sand cannot be distinguished from the light-coloured water everywhere prevalent on the bank. In most parts of the Red sea, on the contrary, the reefs are steep-to and can easily be distinguished by the difference in the colour of the water, the reefs nearly always showing white.

Islands and dangers on northern part.—**Beacons.**—Saunders reef, lying at the north-western extremity of Banco Dahlach, has a depth of 2 fathoms (3^m7), coral, over it; the sea has been seen to break over this reef. A shoal, with a depth of 3 fathoms (5^m5), which has been unsuccessfully searched for, is charted 16½ miles east-south-eastward of Saunders reef.

Fawn reef, lying about 17 miles south-eastward from the north-western extremity of Banco Dahlach, has a depth of 3½ fathoms (5^m9) over it; several banks, with a least depth of 7 fathoms (12^m8), lie within a distance of about 8 miles north-north-westward, northward, and east-north-eastward of this reef, and a 4½-fathom (8^m2) patch lies about 8 miles north-north-eastward. This locality should be avoided.

Three Fathom bank, lying about 30 miles south-south-eastward from the north-western extremity of Banco Dahlach, has a least depth of 2½ fathoms (4^m6), coral, over it; a shoal, with a least depth of 3½ fathoms (6^m9), coral, lies about 5½ miles north-westward of the northern extremity of Three Fathom bank.

Within a distance of about 30 miles eastward of Three Fathom bank are several shoals, having a least depth of 2 fathoms (3^m7), the positions of which can best be seen on the chart.

Two Fathom bank, lying 10 miles south-westward of Three Fathom bank, has a least depth of 2 fathoms (3^m7), coral, over it.

From about 5 miles south-westward of Two Fathom bank a chain of shoals and banks, with a least depth of 4 fathoms (7^m3), extends about 33 miles east-north-eastward.

The island of Harmil is low and wooded and is formed of sand and coral; it is fringed in places by a reef, and there are many rocks close off its southern and south-western sides. Seil Harmil, lying at the southern edge of the reef extending about one mile south-south-eastward of the south-eastern side of Harmil, is a sandbank on which stands an iron framework beacon, 49 feet (14^m9) in height, painted red and surmounted by a staff; Entaasnu, an islet, situated about 2 miles westward of the western side of the southern part of Harmil, is low, coral, wooded, and is fringed by a reef. These islands lie on a sand and coral bank, over which the depths are less than 10 fathoms (18^m3) and are very irregular; this bank extends 3 miles northward and north-eastward and from one to 2 miles eastward of Harmil, also 5 miles south-eastward and 3 miles southward and westward of its southern extremity. Asbab, an islet, about 2 miles southward of Entaasnu (*Lat. 16° 28' N., Long. 40° 05' E.*), is low, coral, and bushy; its eastern and southern sides are bordered by a bank, with depths of less than 10 fathoms (18^m3). A pyramidal concrete beacon, 20 feet

Chart 164.

(6^m1) in height, painted in black and white horizontal bands, stands on Asbab.

Many banks and shoals, having a least depth of 2 fathoms (3^m7), the positions of which can best be seen on the chart, lie within a distance of 6½ miles north-north-westward of the northern end of Harmil and 19½ miles eastward of its eastern extremity; a shoal, with a least depth of 2½ fathoms (4^m6) over it, lies about 3½ miles northward of the northern end of Entaasnu and about the same distance from the north-western side of Harmil.

Romia, an islet, about 5 miles westward of Harmil, is formed of sand and coral, and is wooded; it is bordered by a bank, which extends about half a mile northward, eastward, and south-westward of it. A rocky shoal, with a depth of 3 fathoms (5^m5) over it, lies 1½ miles, another, with depths of less than 6 feet (1^m8) over it, 5 miles, and a third, with depths of less than 6 feet (1^m8) over it, over which the sea breaks, 8 miles west-north-westward of Romia; a shoal, with a depth of 4 fathoms (7^m3), lies about 1½ miles northward of the northern end of this latter shoal. A bank, with depths of from 3½ to 7 fathoms (5^m9 to 12^m8), lies 3½ miles south-westward of Romia, and two shoals lie on its eastern part; the northern has a least depth of a quarter of a fathom (0^m5) over it, and the southern of 1½ fathoms (2^m7). A rocky patch, with depths of less than 6 feet (1^m8), over which the sea breaks, lies about 7½ miles west-south-westward of that islet; about 3½ miles north-westward of this rocky patch is a shoal, with a least depth of 5½ fathoms (10^m1), and one mile east-south-eastward and southward, respectively, of the same rocky patch are two shoals, with least depths of 6 and 5 fathoms (11^m0 and 9^m1). Two shoals lie close together about 10 miles south-westward of Romia, the northern has a least depth of 3½ fathoms (6^m4) over it and the southern of 1½ fathoms (3^m2).

Auali Hutub (Awali Hutub), lying about 16½ miles westward of Romia, is a coral islet; a shoal, with a least depth of 4½ fathoms (8^m7) over it, another with a depth of 6 fathoms (11^m0), and a bank, with a least depth of 8 fathoms (14^m6), lie about one mile north-eastward, 3 miles north-westward, and 4 miles east-north-eastward, respectively, of Auali Hutub.

Auali Soeura (Awali Shaura), an islet, which is situated about 4½ miles south-westward of the south-western extremity of Auali Hutub, is also formed of coral, and is fringed by a reef; a shoal, with a depth of 2½ fathoms (4^m6) over it, lies about 2½ miles eastward of the eastern extremity, and a group of dark coloured rocks, 25 feet (7^m6) high, about 3½ miles west-south-westward of the western extremity of this islet. Between these 25-foot (7^m6) high rocks and Auali Hutub are some banks and shoals, with a least depth of 4 fathoms (7^m3) over them, coral and sand; a shoal, with a depth of 5 fathoms (9^m1), lies about 3½ miles north-westward of Auali Soeura.

The islands and dangers on the western edge of Banco Dahlach are described with Canale Nord di Massaua.

Current.—In February, 1887, a current setting westward at the rate of one knot was experienced in the vicinity of Two Fathom bank.

Anchorage.—There is anchorage off the southern side of Harmil (Lat. 16° 30' N., Long. 40° 08' E.), about 1½ miles south-westward of Seil Harmil beacon, in depths of from 10 to 14 fathoms (18^m3 to 25^m6).

*Chart 164.***Islands and dangers on eastern side of central part.—Beacon.**

—Entaentor is low, sand and coral, and bushy ; it is bordered by a reef, and shoal water, with depths of less than 3 fathoms (5^m5), extends about three-quarters of a mile northward, from one to 2 miles eastward, one mile south-south-westward, and half a mile north-westward of it. An iron framework beacon, painted red and surmounted by a staff, 49 feet (14^m9) in height, stands on the northern part of this island.

Some shoals, with a least depth of 4½ fathoms (7^m8), lie from about 3¼ to 15½ miles eastward of the northern end of Entaentor ; there are also several shoals, with a least depth of 1½ fathoms (2^m7), lying from about 1½ to 3½ miles north-westward, west-north-westward, and westward of the western side of this island.

Between the southern extremity of Entaentor and the northern end of Dahlach Kebir (Dahlak island), an island about 28½ miles south-south-westward, is a line of islands and islets, viz., Gabbi Hu (Ghabbi hu), Daret Cubari (Dahret Kubari), Cubari (Kubari), Norah, and Dhuladiia (Dhu-ladhiya), all lying on a shallow bank, on which are many rocks ; Gabbi Hu, an island, the northern extremity of which is situated about 1½ miles southward of the southern extremity of Entaentor, is low, sand and coral, with a few bushes on it ; Daret Cubari, an islet, about 2½ miles west-south-westward of the south-western side of Gabbi Hu, is low, and formed of coral ; Cubari, an island, the northern extremity of which is about 1½ miles southward of Daret Cubari, is low, and formed of sand and coral ; Norah, an island, the north-eastern side of which is about 1½ miles south-westward of the south-western side of Cubari, is sand and coral, with a few date groves on it, and two villages, i.e., Sahelia, on its north-western coast, and Norah, about 5 miles south-westward of Sahelia, on its western coast ; Dhuladiia, an island, about 2 miles south-south-westward of the south-western side of Norah, is of rocky formation.

Shoals, with depths of 4, 7, and 4 fathoms (7^m3, 12^m8, and 7^m3) over them, lie about 3½ miles east-north-eastward, 7 miles eastward, and 5½ miles east-south-eastward, respectively, of the south-eastern point of Gabbi Hu, and a shoal, with a depth of 2½ fathoms (4^m6) over it, about 2½ miles west-north-westward of the north-western side of this island ; shoals, with depths of 4½ and 1½ fathoms (8^m7 and 2^m3), lie about 2½ and 3½ miles, respectively, west-north-westward of the north-western side of Daret Cubari.

Charts 164, 8d.

A 5-fathom (9^m1) patch, with probably a less depth over it, lies 28 miles eastward of Gabbi Hu ; it is situated on the north-eastern end of a bank, which has depths of from 8 to 10 fathoms (14^m6 to 18^m3) over it.

Chart 164.

Mahun, an island, the north-western point of which is situated about 1½ miles east-south-eastward of the north-eastern point of Norah, is low, formed of sand and coral, and lies on the shallow bank embracing the islands and islets described above ; a chain of islets, lying about 1½ miles southward of the southern extremity of Mahun (*Lat.* 16° 03' N., *Long.* 40° 11' E.), extends about 4 miles in an easterly and westerly direction. Dhu-l-fidol, an island, the western extremity of which is about 5½ miles east-south-eastward of the eastern side of Mahun, is formed of sand and coral and is low ; a bank, with depths

Charts 8d, 2523.

Chart 164.

of from 2 to 3 fathoms (3^m7 to 5^m5) over it, extends about $1\frac{1}{2}$ miles westward of its western extremity and $3\frac{1}{2}$ miles east-south-eastward of its eastern extremity; there are several rocks, with depths of less than 6 feet (1^m8) over them, on the eastern part of this bank, which was reported, in 1940, to be extending further eastward; a shoal was reported, in 1940, to lie about $2\frac{1}{2}$ miles north-westward of the western extremity of Dhu-l-fidol, and there is a shoal, with a least depth of 4 fathoms (7^m3), about 2 miles further northward, and another, with a depth of 5 fathoms (9^m1), about $2\frac{1}{2}$ miles north-north-eastward of the eastern extremity of the same island. A rocky shoal, with depths of less than 6 feet (1^m8) over it, a shoal, with a depth of 5 fathoms (9^m1), and another, with a least depth of $3\frac{1}{2}$ fathoms (6^m4), lie about $6\frac{1}{2}$ miles east-south-eastward, and $14\frac{1}{2}$ miles and $17\frac{1}{2}$ miles eastward, respectively, of the eastern extremity of Dhu-l-fidol.

Dhulalam, an island, the north-western point of which is situated about $1\frac{1}{2}$ miles eastward of the south-eastern point of Norah, is low and sandy; Martaban, an islet, the north-western side of which lies about one mile south-eastward of the southern extremity of Dhulalam, is also low and sandy. These islands lie on the shallow rocky bank embracing the islands and islets between Entaentor and Dahlach Kebir.

Arab (Akrah), two islets, lying 3 and 5 miles, respectively, east-south-eastward of the eastern extremity of Martaban, are low and sandy; a shoal, with a depth of one fathom (1^m8) on it, lies half a mile south-south-westward of the eastern islet; the western islet lies on the shallow bank just mentioned.

Dhulanchibat (Dhu-l-ankibat), an island, the western extremity of which is about $3\frac{1}{2}$ miles east-north-eastward of the eastern extremity of Martaban, is low and sandy, and lies on a reef which extends about $3\frac{1}{2}$ miles east-south-eastward of its eastern side; Derom, an islet, the western extremity of which is situated about $6\frac{1}{2}$ miles east-south-eastward of the eastern extremity of Dhulanchibat, is low and sandy, and lies on a shallow rocky bank which extends about 3 miles east-south-eastward, half a mile southward, and $2\frac{1}{2}$ miles west-south-westward of it; Hawatib, the western side of which lies about $9\frac{1}{2}$ miles eastward of the eastern side of Derom, is a low sandy bushy islet; Hawatib Kebir, the north-western end of which is situated about one mile east-south-eastward of the south-eastern end of Hawatib, is a low sandy island covered with bushes, and is fringed by a bank, with depths of less than 6 feet (1^m8) on it, which extends about $1\frac{1}{2}$ miles east-north-eastward of its eastern extremity; a shoal, with a depth of 3 fathoms (5^m5), lies about three-quarters of a mile south-south-westward of the south-western point of Hawatib Kebir.

Charts 164, 8d.

A rocky patch, with depths of less than 6 feet (1^m8) over it, lies about 9 miles north-eastward, a shoal, with a depth of 5 fathoms (9^m1), about 5 miles north-eastward, a shoal, with a depth of 3 fathoms (5^m5), about 6 miles east-north-eastward, and a shoal, with a depth of 2 fathoms (3^m7), about $4\frac{1}{2}$ miles eastward of Hawatib Kebir (*Lat. $15^{\circ}53' N.$, Long. $40^{\circ}36' E.$*); a bank, with depths of from 6 to 10 fathoms (11^m0 to 18^m3) over it, extends about 8 miles north-eastward from a position about 12 miles eastward of Hawatib Kebir.

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Chart 164.

The islands and dangers southward of an imaginary line joining the northern extremity of Dahlach Kebir and the southern extremity of Hawatib Kebir are described on pages 241-244.

Islands and dangers in centre of central part.—Beacons.— 5
Ucale (Hukale), an islet, about 8 miles westward of Entaentor, is low, sand and coral, and bushy, and is bordered by a reef, which extends about three-quarters of a mile southward of its southern extremity ; a shoal, with a least depth of 2 fathoms (3^m7), lies about 1½ miles westward of Ucale, and a bank, with a least depth of 3½ fathoms (6^m9) over 10 it, on which this shoal and Ucale lie, extends about 3 miles south-westward of the southern extremity of this islet ; a shoal, with a least depth of 1½ fathoms (3^m2), lies about 4½ miles north-westward of the north-western point of Ucale. Amber (Seil Anber), a wooded islet, lies about 4½ miles westward of Ucale ; it is bordered by a reef which extends 15 of about half a mile north-north-eastward and south-south-westward of it.

Isratu, composed principally of coral rock, the eastern extremity of which is situated about 4½ miles westward of Amber, is one of the largest and highest islands on Banco Dahlach, with some small peaked 20 hills, attaining an elevation of 101 feet (30^m8) ; an inlet on its north-eastern side penetrates about 2½ miles inland. The southern extremity of this island, terminating in Ras Haral, is a peninsula, on the southern edge of which stands a pyramidal beacon, with a topmark, painted in black and white vertical stripes ; a pyramidal concrete beacon, 20 feet 25 (6^m1) in height, painted in black and white stripes and surmounted by a rhomboid and a rectangle, stands on the eastern extremity of Isratu ; another beacon stands on a hill at the middle of its south-western side ; and a pyramidal beacon, with a topmark, painted in black and white stripes, stands on Ras Haral. 30

Vusta (Wusta), an island, the north-eastern extremity of which is situated about 1½ miles westward of the western extremity of Isratu, is composed of coral and is rather high, with a beacon standing in the middle of its south-eastern side ; Seil Vusta (Seil Wusta), an islet about half a mile north-north-eastward of the north-eastern extremity of 35 Vusta, is rocky, with a reef extending three-quarters of a mile south-eastward of it ; a reef also extends about one mile south-eastward of the south-eastern side of Vusta, on the south-eastern edge of which is a rocky islet, with a beacon on it. Isratu and Vusta are situated on a sand and coral bank. 40

Entuvedul, Adasi, Seil Adasi, Asgar (Ashgar), Tamanio, and Du Laham (Dhu-lalam), are a group of islands and islets lying on a shallow bank which lies from about 3 to 12½ miles south-eastward of Ras Haral ; some of these islands are low and sandy and others high and rocky, with bushes. A shoal, with a depth of 1½ fathoms (3^m2) over it, lies at the 45 northern extremity of this bank, and a shoal, with a least depth of 2½ fathoms (5^m0), about 2 miles south-eastward of it. A beacon, consisting of iron barrels one above the other, surmounted by a sphere, 16 feet (4^m9) in height, stands on Seil Adasi (*Lat.* 16° 10' N., *Long.* 39° 56' E.). 50

Qad Norah, Seil Norah, Balaa, and Dar Solum, are a group of rocky islets lying near the western edge of the shallow bank which embraces Norah ; there is a beacon on Dar Solum.

Entaidel, an island, the northern extremity of which is situated about

Chart 164.

5 miles west-south-westward of Seil Adasi, is sandy and rocky, with a beacon, consisting of iron barrels one above the other, 10 feet (3^m0) in height, standing on the western side of the island ; with the exception
 5 of its eastern side, Entaidel is bordered by a reef which extends to as far as three-quarters of a mile offshore. A shoal, with a depth of 1½ fathoms (2^m3) over it, lies about one mile west-north-westward of the north-western point of Entaidel.

Between the southern end of Entaidel and the north-western side of
 10 Umm es Seil, an islet about 4½ miles south-south-eastward, are some shoals, with a least depth of 2 fathoms (3^m7), the positions of which can best be seen on the chart.

Umm es Seil is sandy and rocky, and lies on a shallow bank which extends about one mile westward of it ; a shoal, with a least depth
 15 of 2 fathoms (3^m7) over it, lies about 1½ miles westward of this islet.

A shoal, the northern extremity of which is situated about 3¼ miles west-north-westward of the north-western point of Umm es Seil, extends about 2¼ miles south-westward and has a least depth of one
 20 fathom (1^m8) over it ; Hommed Abi and Hommed Nuusc are two high rocks lying on the northern part of this shoal ; a shoal, with a depth of 4½ fathoms (8^m2), lies about 2 miles north-north-eastward of Hommed Abi, the northern rock.

Entuguduf (Entoghodof), Adbara Seghir, and Adbara Kebir, are
 25 three low sandy islets lying on a shallow rocky bank lying from about 1½ to 5 miles south-south-westward of the southern end of Umm es Seil ; Qad Entuguduf (Kad Entoghodof) lies about one mile west-north-westward of the northern extremity of Entuguduf on the same bank, which extends 1¾ miles north-westward of the latter islet. A
 30 beacon, consisting of iron barrels one above the other, 23 feet (7^m0) in height, surmounted by a sphere, stands on Adbara Kebir.

Shoals, with depths of 2½, 5, and 1½ fathoms (5^m0, 9^m1, and 2^m7) over them, lie about three-quarters of a mile north-north-westward, 1¾ miles westward, and 2¼ miles south-westward, respectively, of
 35 Adbara Kebir.

The islands and dangers farther southward are described with Dahlach Kebir on page 245.

Islands and dangers on western side of central part of Banco Dahlach.—Beacon.—Tanam, an island, the northern extremity of
 40 which is situated about 2½ miles westward of the south-western end of Vusta, is rather high and has a small but conspicuous peak ; a beacon, 14 feet (4^m3) in height, stands on the western side of the island. A rocky bank, with depths of less than 6 feet (1^m8) over it, and on which are some rocky islets and some above-water rocks, extends from about
 45 1¼ miles northward to 3½ miles southward of Tanam.

Ierom (Jerom), an islet situated about 5 miles southward of Tanam, lies near the centre of a shoal, with a least depth of 1½ fathoms (2^m3) over it ; Qad Ierom (Kad Jerom), an islet, lying about 4¼ miles south-south-westward of Ierom (*Lat.* 16° 12' N., *Long.* 39° 46' E.), has shoal
 50 water extending about 1½ miles northward and half a mile southward of it. One shoal, with a depth of 3 fathoms (5^m5), and two shoals, with depths of 4½ fathoms (7^m8), lie from about 2 to 2½ miles southward of Qad Ierom.

A shoal, the north-western extremity of which is situated about

Chart 164.

2½ miles south-eastward of Qad Ierom, extends about 3 miles south-eastward and has a least depth of 2½ fathoms (4^m1) over it.

Entufasc, a low sandy islet about 5½ miles south-south-eastward of Qad Ierom, lies at the south-western end of a shoal, which has a least depth of one fathom (1^m8) over it; a shoal, with a least depth of one fathom (1^m8), and another, with a depth of 2½ fathoms (5^m0), lie about half a mile westward and one mile south-south-westward, respectively, of Entufasc.

About 11 miles west-south-westward of the south-western point of Tanam is situated the northern extremity of a sandy rocky bank, which extends about 5 miles in a south-easterly direction; a shoal, with a depth of 3 fathoms (5^m5) over it, lies near its north-western end, and several rocky heads, with depths of less than 6 feet (1^m8), lie at its south-eastern end. This bank, with other banks southward, lies on the eastern side of a deep channel, which has only been imperfectly surveyed, eastward of the island of Harat.

Malak, Umm Sciora, and Umm Alcarat, are a group of islets lying about 14½ miles south-westward of the south-western point of Tanam; Malak, low and sandy, is situated at the southern end of a rocky shoal which extends about 2½ miles northward of it, and about three-quarters of a mile eastward of the north-eastern edge of this rocky shoal is a shoal, with a depth of 2 fathoms (3^m7) over it; a narrow channel separates Malak from Umm Sciora. Umm Sciora and Umm Alcarat, composed of coral, are low and wooded, and lie on the eastern side of a shoal, with a least depth of one fathom (1^m8), which extends about 2½ miles south-south-eastward of the former islet; at the western end of this shoal is Durrum Seghir, a patch of sunken rocky heads, with one rock above water. Jurrum Kabla, 2½ miles eastward of Umm Sciora, is a rocky patch with depths of less than 6 feet (1^m8) over it; from about one mile eastward of Jurrum Kabla a shoal, with a least depth of 2 fathoms (3^m7), and a rock, with a depth of less than 6 feet (1^m8), on its north-eastern end, extends about 3½ miles south-eastward; a shoal, with a depth of 3 fathoms (5^m5), lies about three-quarters of a mile westward of Jurrum Kabla, and a similar shoal about 1½ miles further south-eastward. Several patches, with depths of from 4 to 10 fathoms (7^m3 to 18^m3), lie within a distance of about 9 miles northward and north-eastward of Jurrum Kabla. A shoal, with a depth of 1½ fathoms (2^m7), lies about 2½ miles westward of Umm Sciora, and a shoal, with a least depth of one fathom (1^m8), lies from about 1½ to 2½ miles west-south-westward of the rock above water on Durrum Seghir. Jurrum Gublah, a rocky patch, with depths of less than 6 feet (1^m8), lies about 2 miles south-south-eastward of Umm Alcarat.

Seil, an islet 3½ miles south-westward of Umm Alcarat, is low and rocky; Seil Badira is an islet lying about 1½ miles south-eastward of the former; both are bordered by reefs; Umm Ali, an islet 4 miles eastward of Seil Badira (*Lat.* 16° 01' N., *Long.* 39° 36' E.), is low, sandy, and bushy, and lies on a shallow bank, and there is a rock, above water, about three-quarters of a mile east-south-eastward of it. A shoal, with a depth of 3 fathoms (5^m5) over it, and another, with a least depth of 1½ fathoms (2^m7), lie about 2 miles south-south-eastward and from 1½ to 2½ miles southward of Seil Badira.

From about 3½ miles south-south-westward of Seil Badira, a shallow rocky bank extends 7 miles south-eastward, and on this bank lie

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Baradu and Dehel (Dohul); Baradu, a 20-foot (6^m1) high islet, is sandy, with some palms near its centre; Dehel, a flat island, has a village, with a square white mosque, situated on its north-western side, and half a mile eastward of this village is a grove of dom palms, which attain elevations of 75 feet (22^m9).

Dul-baut (Dohul Bahut), an island, the eastern extremity of which is situated about 3 miles westward of Baradu, is sand and coral, with a conspicuous clump of trees on it; it is fringed by a reef which extends about half a mile northward of it. A shoal, with a depth of 4½ fathoms (8^m7) over it, lies 1½ miles northward of this island, and a shoal, with a least depth of 3½ fathoms (5^m9), extends 2 miles north-eastward from a position three-quarters of a mile north-eastward of Dul-baut.

Daret (Dahret), an islet about 1½ miles westward of the western extremity of Dehel, is sandy, and lies on a reef which extends about three-quarters of a mile northward and south-eastward of it.

The islands and dangers on the western edge of this bank are described with Canale Nord di Massaua.

Anchorage.—There is anchorage in depths of about 10 fathoms (18^m3) about one mile westward of the beacon on Entaentor.

Anchorage may be found in depths of from 7 to 10 fathoms (12^m8 to 18^m3) about one mile west-north-westward of Ras Haral, the southern extremity of Isratu.

North-eastern approach to Porto di Massaua.—The north-eastern approach from seaward to Porto di Massaua lies between Harmil, with the shoals eastward and southward of it, Ucale, Ras Haral, Ierom, Qad Ierom, Entufasc, with the dangers north-eastward and south-westward of it, and Dehel, on the northern and western sides of the fairway, and Entaentor, with the dangers north-westward of it, Entuvedul, with the dangers north-westward of it, Entaidel, Hommed Abi and Hommed Nuusc, Adbara Kebir, with the shoal south-westward of it, and Dur Gaam, an islet described on page 245, on the southern and eastern sides of the fairway. There appears to be a least depth of 7 fathoms (12^m8) in this channel, which should only be used by vessels with local knowledge.

Directions.—There are many conspicuous landmarks in this approach, but some of the beacons, which were erected for the purpose of the survey, in 1928–29, may be now destroyed or considerably damaged. The beacons on Seil Harmil and Entaentor are excellent landmarks; Ucale, owing to its trees, is visible from a considerable distance, and Asbab may be identified by its concrete beacon, painted with black and white horizontal bands.

A vessel coming from seaward should steer a westerly course, passing about 3½ miles northward of Entaentor (*Lat.* 16° 20' N., *Long.* 40° 14' E.), but care must be taken to avoid the shoal, with a least depth of 2 fathoms (3^m7) over it, 5 miles east-south-eastward of Seil Harmil beacon, and a similar shoal, 3½ miles north-westward of Entaentor beacon. This course leads between Asbab and Ucale, and thence between Amber and a shoal, with a least depth of 1½ fathoms (3^m2), lying about 3½ miles north-north-eastward; this shoal can always be identified by the light colour of the water over it.

After passing northward of Amber a south-south-westerly course leads towards Entaidel, passing between Ras Haral beacon and the 1½-fathom (3^m2) patch, 3½ miles east-south-eastward; a vessel can

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Chart 164.

pass close to the eastern side of Entaidel as shoal water extends only a short distance offshore and can be easily seen, but care must be taken to avoid the $2\frac{3}{4}$ -fathom (5^m0) patch about $1\frac{1}{2}$ miles south-eastward of the south-eastern side of this island.

Course must then be altered south-westward and, by steering with Entaidel beacon astern, bearing 033° , a vessel will pass north-westward of Hommed Abi and Hommed Nuusc and the shoal on which these rocks stand, also of the $4\frac{1}{4}$ -fathom (8^m2) patch 2 miles north-north-eastward of Hommed Abi, and south-eastward of Entufasc and the shoals in its vicinity; the latter are not easily seen owing to the nature of the bottom. Qad Entuguduf, on the south-eastern side of the channel, is easily identified as, although low, owing to its sandy formation it has a conspicuous white appearance; Adbara Kebir beacon is also conspicuous; Umm Ali, on the north-western side of the channel resembles a large bush.

After passing westward of Adbara Kebir a vessel should shape course to pass about one mile eastward of the reef extending half a mile eastward of the eastern extremity of Dehel and then steer a south-westerly course for Porto di Massaua (*see* view facing page 248); the survey beacon, consisting of a small dark pyramid with a post at its side, standing in the central part of Dehel, is conspicuous from seaward. Dur Gaam, on the south-eastern side of the channel, is also conspicuous. In this area the current usually sets south-eastward during the winter and north-westward in the summer.

Anchorage in north-eastern approach.—*See* page 240.

Dahlach Kebir.—Dahlach Kebir (Dahlak), an island on the western side of Banco Dahlach, is much indented; it is composed principally of coral rock, interspersed with patches affording a supply of good grass in the rainy season. The island is mostly low; Jebel Cussum (Kusum), a coral mound, is situated in the middle of its north-eastern side, about $13\frac{1}{2}$ miles east-south-eastward of Ras Antalo, the north-western extremity of the island; Imamac, a small tableland, on which is a beacon, is situated on the western side of the island, about 8 miles southward of Ras Antalo; Jebel Im Ium, on which stands a beacon, lies on the north-eastern side of Ghubbet Mus Nefit, about 6 miles east-south-eastward of Imamac and, as seen from south-westward, has the appearance of a conspicuous wedge-shaped mound.

North-eastern side of Dahlach Kebir.—**Coast.**—From Ras Antalo the north-eastern coast of Dahlach Kebir trends about 34 miles south-eastward to Ras Shoke (*Lat.* $15^\circ 34' N.$, *Long.* $40^\circ 26' E.$) and, close eastward of Jebel Cussum, is indented by an inlet, in which lies Arue (Erwa), a moderately high coral island, on which are a few huts; a narrow channel, with a least depth of 3 fathoms (5^m5) in the fairway, leads westward of Arue, and there is a narrow boat channel eastward of this island.

Off-lying islands and dangers.—The islands and dangers northward of an imaginary line joining Ras Antalo and the southern extremity of Hawatib Kebir are described on pages 235-236.

Southward of this line a chain of islands lies from about 9 to 44 miles eastward of Ras Antalo; these are described from west to east. Dergoman Seghir, about 9 miles eastward of Ras Antalo and about 2 miles offshore, is low and sandy; Dergoman Kebir, the north-western point of which is situated about $1\frac{1}{2}$ miles east-south-eastward of the south-

Chart 164.

eastern point of Dergoman Seghir, is high and rocky, and wooded in its south-eastern part. Seil Sican (Seil Sikan), the north-western extremity of which lies about $2\frac{1}{4}$ miles south-eastward of the eastern extremity of Dergoman Kebir, is a high bare coral islet; a shoal, with a depth of 2 fathoms (3^m7), lies about 2 miles eastward of it. These islands lie on the shallow rocky bank embracing the islands and islets between Entaentor and Dahlach Kebir.

Saiin (Sayin), an islet, the south-western point of which is situated about 4 miles east-south-eastward of Seil Sican and $5\frac{1}{4}$ miles north-eastward of Ras Arue (Erwa), the northern extremity of Arue, is high and rocky; it lies on a reef extending $9\frac{3}{4}$ miles north-eastward of Arue, and Dahret Dulke, an islet, stands on the north-eastern edge of this reef, about 2 miles north-eastward of Saiin. Dha-n-nafarik, an islet, situated about 4 miles east-south-eastward of Dahret Dulke, is high and rocky, and is bordered by a rocky bank which extends about three-quarters of a mile north-north-eastward and $1\frac{1}{2}$ miles south-westward of it. Dhu-l-kuff, lying about $6\frac{1}{4}$ miles east-north-eastward of the eastern extremity of Dha-n-nafarik, is a low sandy island, with a few bushes on it; a reef extends about 2 miles north-eastward of it, and from about $1\frac{1}{4}$ to $2\frac{1}{4}$ miles westward of the western extremity of this island, is a rocky shoal, with depths of less than 6 feet (1^m8) over it. Dhu-l-bia, a low sandy island, the western side of which lies about 3 miles east-south-eastward of Dhu-l-kuff, is bordered by a shallow rocky bank which extends about half a mile northward and $3\frac{1}{4}$ miles southward of it; a rocky patch, with depths of less than 6 feet (1^m8) over it, lies about $2\frac{3}{4}$ miles eastward of the south-eastern point of this island.

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Bilha, an island, the western extremity of which is situated about $5\frac{1}{2}$ miles south-eastward of the eastern extremity of Hawatib Kebir, lies on a rocky bank, which has depths of less than 6 feet (1^m8) over it and extends about $4\frac{1}{2}$ miles north-eastward and $1\frac{1}{4}$ miles south-westward of it; a bank, with a least depth of 8 fathoms (14^m6), lies about 19 miles eastward of this island.

From a position about 6 miles eastward of Ras Arue a chain of islands and islets extends about 26 miles in an easterly direction. Seil Arabi (*Lat. $15^{\circ} 44' N.$, Long. $40^{\circ} 20' E.$*), the westernmost of this chain, lying $2\frac{1}{4}$ miles offshore, is a high rocky islet of coral formation and is bordered by a shallow bank which extends to as much as $1\frac{1}{4}$ miles from it; a rock, with a depth of less than 6 feet (1^m8) over it, lies about three-quarters of a mile north-westward, a similar rock, about 2 miles north-north-eastward, and a third rock, about 3 miles northward, of this islet. Yermalkau, an islet about $4\frac{1}{4}$ miles south-eastward of Seil Arabi, is fringed by a shallow bank; a rock, with a depth of less than 6 feet (1^m8) over it, lies about 2 miles northward of Yermalkau, and two shoals, reported in 1940, with depths of $3\frac{1}{2}$ and $1\frac{1}{2}$ fathoms (5^m9 and 2^m7), lie about 3 miles northward and $3\frac{1}{2}$ miles north-north-eastward, respectively, of this islet. Gharib, which lies about 6 miles north-north-eastward of Yermalkau, and Dhu-lakal, $2\frac{3}{4}$ miles south-eastward of Gharib, are two low sandy islets standing on a rocky shallow bank; Senach, an islet, situated about $2\frac{1}{4}$ miles south-south-westward of Dhu-lakal, is bordered by a bank. Dhu-nishub, a low sandy island, situated about $2\frac{1}{4}$ miles eastward of Dhu-lakal, is fringed

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by a reef; Rijyuma, known locally as Rayum, lying about 5 miles east-south-eastward of Dhu-nishub, is a low island bordered by a reef which extends about half a mile north-eastward of its north-eastern end; Raka, a low sand and coral islet, fringed by a reef, lies about one mile eastward of Rijyuma.

Chart 8d.

Seghala, known locally as Farcha, the western extremity of which is situated about $3\frac{1}{2}$ miles east-north-eastward of Raka, is a low sandy bushy island bordered by a reef; it lies on a shallow rocky bank which extends about $2\frac{1}{2}$ miles northward and one mile south-eastward of it; a shoal, with a depth of 5 fathoms (9^m1) over it, lies about $2\frac{1}{2}$ miles north-eastward of the north-eastern point of Seghala. No tidal streams were perceptible near this island during 15 days tidal observations, in January, 1887.

Numerous islands and dangers lie within a distance of about 40 miles eastward and 60 miles east-south-eastward of Ras Shoke.

Chart 164.

Darraka (Darraka-el-Barr), an islet, on which is a small village, about $2\frac{3}{4}$ miles north-north-eastward of Ras Shoke, lies on the coastal bank which extends about $3\frac{1}{2}$ miles north-north-eastward and 5 miles eastward of the south-eastern end of Dahlach Kebir; the southern end of this bank was reported, in 1940, to have extended about $1\frac{1}{2}$ miles eastward; Darraka-el-Bahr, an islet, which is charted about $3\frac{1}{2}$ miles eastward of the eastern extremity of Darraka, is low and sandy and is bordered by a bank, with depths of 3 fathoms (5^m5) over it; this islet was reported, in 1940, to lie one mile further eastward; shoals, with depths of half a fathom and $1\frac{1}{2}$ fathoms (0^m9 and 2^m7), lie about 3 miles northward and $2\frac{1}{2}$ miles north-eastward, respectively, of Darraka-el-Bahr; Umm-en-Nayim, an islet about 2 miles southward of Darraka-el-Bahr, lies at the north-western end of a rocky reef which extends about $3\frac{1}{2}$ miles east-south-eastward of it; shoals, with depths of $3\frac{3}{4}$ and 5 fathoms (6^m9 and 9^m1) over them, lie $4\frac{1}{2}$ miles east-south-eastward and $8\frac{1}{2}$ miles eastward, respectively, of Umm-en-Nayim.

Tor (*Lat.* $15^{\circ} 36' N.$, *Long.* $40^{\circ} 37' E.$), the western extremity of which is situated about $4\frac{1}{2}$ miles east-north-eastward of Umm-en-Nayim, is rocky, and consists of two islets, joined by a reef, which dries, and which extends to about three-quarters of a mile from its southern side; a shoal, with a depth of 5 fathoms (9^m1) over it, lies about three-quarters of a mile northward of the northern extremity of Tor. Maharib, an islet, situated about 3 miles northward of the northern extremity of Tor, is low and fringed by a reef; a bank, with a least depth of 4 fathoms (7^m3), extends about three-quarters of a mile southward of it.

Chart 143.

Mustamila, an island, the western extremity of which is situated about 4 miles east-south-eastward of Maharib, is high and sandy, and is bordered by a reef which extends to as much as three-quarters of a mile offshore; Dahret Seghala, situated about 3 miles north-eastward of Mustamila, is a low sandy bushy island, fringed by a reef; Zauber, known locally as Du-Barr, about $2\frac{1}{2}$ miles southward of Dahret Seghala, is a high sandy island, with a rocky bank extending about one mile north-north-eastward of its northern and the same distance west-south-westward of its western extremity.

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A rocky bank, the northern extremity of which is situated about 4 miles north-eastward of Seghala, extends about 16 miles south-eastward; Sha'ab Ali, with depths of less than 6 feet (1^m8) over it, lies
 5 at the south-western edge of this bank, and two 2-fathom (3^m7) patches, with some rocky heads, lie 1½ miles north-westward of the north-western end and one mile north-north-eastward of the north-eastern side, respectively, of Sha'ab Ali.

Chart 143.

10 Hatitau, lying 2½ miles eastward of Tor, is a high rocky island, with its eastern side fringed by a reef which extends about half a mile offshore; a shoal, with a depth of 5 fathoms (9^m1) over it, lies about 2 miles south-westward of its southern end. Salima, the northern end of which is situated about 2½ miles southward of Zaubur, is a high
 15 rocky island, fringed by a reef on its northern side.

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Vessels approaching Dahlach Kebir from eastward must be careful to avoid the rocky bank on which is Sha'ab Ali; the depths on the banks and between the islands on Banco Dahlach can best be seen on
 20 the chart.

The islands and dangers further southward are described on pages 248-249.

Chart 164.

Anchorage.—There is anchorage in depths of 7 fathoms (12^m8),
 25 for vessels with local knowledge, off the village of Cubbani (Kubbani), which is situated on the northern coast of Dahlach Kebir, about 9½ miles east-south-eastward of Ras Antalo.

Dhu Bellu anchorage, which is only available for small vessels with local knowledge, is an oval-shaped opening in the reef about 2 miles
 30 south-eastward of the village of the same name, which is situated about 6 miles south-south-eastward of Cubbani. The passage leading to it commences about one mile south-eastward of Seil Sican (*Lat.* 15° 49' N., *Long.* 40° 13' E.), where for a short distance there is a very narrow channel through the coastal bank; the channel then widens
 35 for a distance of about 1½ miles, within which the passage becomes very narrow, and a vessel proceeding through it must keep the reef on the western side of the passage aboard so as to avoid the shallow bank eastward. There is a least depth of 3 fathoms (5^m5) in the passage leading to this anchorage and of from 3 to 6 fathoms (5^m5 to
 40 11^m0) in the anchorage.

There is good anchorage for vessels with local knowledge, in depths of about 5 fathoms (9^m1), about 5 cables off the north-western side of Tor.

Tidal streams.—The tidal streams in the passage leading to Dhu
 45 Bellu anchorage, and through the passages eastward and westward of Arue, at times attain a considerable velocity.

Western side of Dahlach Kebir.—Coast.—Dangers.—Ghubbet Entatu is entered between Ras Antalo and Ras Dofueur, about 5½ miles south-south-westward, and affords anchorage off Cumbeibà (Kun-
 50 beiba), a village on the south-eastern shore of the bay; the villages of Melill, Aranat, and Sed Daaf stand on the southern shore of this bay.

From Ras Dofueur the coast trends about 1½ miles south-south-westward to Ras Felag Bacar and thence 2½ miles southward to Ras

Charts 8d, 2523.

Chart 164.

Ar-Ar; the village of Gembeli is situated about 2 miles east-north-eastward of Ras Ar-Ar.

Chart 2161.

Between Ras Ar-Ar and Ras Bulul, about 2 miles south-south-eastward, is the entrance to Ghubbet Mus Nefit (Soghra), which is described on page 247.

From Ras Bulul the coast trends about $4\frac{1}{2}$ miles south-south-eastward to Ras Malcomma (Malkomma) and is fringed by a reef, which extends about $2\frac{3}{4}$ miles north-westward of the latter 10 cape.

A detached rock, with a depth of a quarter of a fathom (0^m5) over it, lies at the edge of the coastal bank, about $7\frac{1}{2}$ cables southward of Ras Bulul and 2 cables offshore.

Chart 164.

15

Off-lying islands and dangers.—Beacons.—A shallow rocky bank, the western extremity of which is situated about 8 miles westward of Ras Antalo, extends about $5\frac{1}{4}$ miles in a north-north-easterly and south-south-westerly direction, and near its eastern edge are three islets Eucus, Dalcus, and Dabanet; a shoal, with a depth of $3\frac{1}{2}$ fathoms 20 (6^m4) over it, and a rocky patch, with depths of less than 6 feet (1^m8), lie about $3\frac{3}{4}$ miles westward and $1\frac{1}{4}$ miles southward, respectively, of Dabanet.

A narrow channel separates the bank described above from the coastal bank extending about 5 miles north-westward and $4\frac{1}{4}$ miles 25 westward of Ras Antalo; two islets, Duliacas and Dar Ottun, lie on this part of the coastal bank, Dar Ottun being low, and composed of sand and coral.

Du Rig-Rig (Dhu-rijrij), situated about $2\frac{1}{4}$ miles south-south-westward of Dabanet, is a low wooded islet lying on a reef which extends 30 about half a mile north-westward of its north-western point and $1\frac{1}{4}$ miles south-south-eastward of its southern end.

A rocky bank, with depths of less than 3 fathoms (5^m5) over it, extends about $4\frac{1}{2}$ miles north-north-westward of Ras Dofueur (*Lat.* $15^{\circ} 47' N.$, *Long.* $39^{\circ} 56' E.$); about $1\frac{1}{2}$ miles south-south-westward 35 of the northern extremity of this bank and 2 miles offshore is Sarad, a moderately high and rocky islet, and another islet lies close north-eastward of it. The bank extends about $1\frac{1}{2}$ miles westward of Sarad and has a depth of $3\frac{1}{4}$ fathoms (5^m9) at its western edge.

Dur Gaam, a wooded coral sandy islet, about 10 miles westward of 40 Ras Dofueur, is fringed by a reef; a wooden pyramidal beacon, 23 feet (7^m0) in height, stands on its western extremity. Dur Ghella (Dar Ghulla), situated about 2 miles eastward of Dur Gaam, is a narrow wooded islet, on the southern extremity of which stands a black and white wooden pyramidal beacon, 13 feet (4^m0) in height; shoals, with 45 depths of $4\frac{1}{4}$ and $1\frac{1}{2}$ fathoms (7^m8 and 2^m7) over them, lie close northward and south-eastward, respectively, of the northern and southern ends of this islet, and a shoal, with a depth of $6\frac{1}{2}$ fathoms (11^m9), the position of which is approximate, is charted about three-quarters of a mile south-eastward of the southern end; shoals, with depths of 50 $3, 4\frac{1}{4}$, and $3\frac{1}{4}$ fathoms (5^m5 , 8^m7 , and 5^m9), lie about $1\frac{1}{4}$, $1\frac{1}{2}$, and $3\frac{1}{4}$ miles, respectively, eastward of Dur Ghella beacon.

Sha'ab Raia, the eastern extremity of which is situated about $2\frac{3}{4}$ miles westward of Ras Ar-Ar, extends about 2 miles in a westerly

Charts 164, 8d, 2523.

Chart 164.

direction and is nearly awash in places ; a shoal, with a depth of $4\frac{1}{2}$ fathoms (8^m2), sand, lies about half a mile northward of it.

Charts 2161, 164.

- 5 Entedebir, an islet, the north-eastern point of which is situated about half a mile west-south-westward of Ras Ar-Ar, is coral, and much indented ; a rocky bank extends about one mile north-westward of its western side, and Cundabilu (Kundabilu), a wooded islet, lies at the north-western end of this bank. Enteraia, an islet close southward of Entedebir, lies at the southern end of the bank just mentioned, the southern edge of which is steep-to ; a reef extends eastward of Enteraia to within a very short distance of the coastal reef.

Chart 2161.

- Enteara, an islet, situated about $3\frac{1}{2}$ miles southward of Enteraia, is sandy, and its white coast is conspicuous when the sun is shining ; a masonry beacon, painted white, stands near the centre of the islet. A reef fringes Enteara and extends about 5 cables east-north-eastward of its north-eastern point ; a rocky shoal, with a depth of 3 fathoms (5^m5) over it, lies about 7 cables north-eastward of the north-eastern point of this islet.

A channel, about 7 cables wide, between the reef fringing Enteara and the coastal reef extending north-westward of Ras Malcommma, affords anchorage, but the reefs on either side must be approached with caution.

- 25 A reef extends about $1\frac{1}{2}$ miles westward of Ras Malcommma and on this reef, about 4 cables from the cape, is Scoglio Baius, a low black rocky islet.

Chart 164.

Anchorage.—There is anchorage on the southern side of Dur

- 30 Gaam (*Lat. $15^{\circ} 47' N.$, Long. $39^{\circ} 45' E.$*), with the extremities of this islet bearing 019° and 312° , respectively.

From close north-westward of Sha'ab Raia to within about $1\frac{1}{2}$ miles south-eastward of Dur Ghella, anchorage may be obtained in depths of from 10 to 16 fathoms (18^m3 to 29^m3), sand.

- 35 There is indifferent anchorage in depths of about 10 fathoms (18^m3), with Cundabilu bearing 031° and the southern extremity of Enteraia 121° .

Chart 2161.

Ghubbet Mus Nefit.—**Islands and dangers.**—**Beacons.**—

- 40 **Buoys.**—The island of Nocra (Nakhra Khor) lies in the entrance to Ghubbet Mus Nefit (Soghra). It is composed principally of coral rock, but there are small valleys and patches of good grass, with here and there a few dom palms ; a village stands in the middle of its southern side.

- 45 The entrance channel, southward of Nocra, has a least depth of $5\frac{1}{2}$ fathoms (10^m1) in the fairway ; the channel northward of this island is narrow, intricate, and suitable only for boats.

A reef extends about 3 cables south-westward of Ras Ilet, the southern extremity of Nocra, and a beacon, consisting of a column painted in black and white horizontal bands, stands on the south-eastern edge of this reef, about three-quarters of a cable southward of Ras Ilet.

- 50 A can buoy, painted in black and white vertical stripes and surmounted by a cone, is moored on the western edge of the coastal bank

Charts 164, 8d, 2523.

Chart 2161.

about 4 cables south-south-westward of Ras Bulul, and a beacon stands about $2\frac{1}{2}$ cables east-south-eastward of this point.

A beacon, consisting of a white pyramid, surmounted by a staff, is situated close off the southern side of Nocra, about 7 cables north-eastward of Ras Ilet; a beacon consisting of a black pyramid with a white vertical stripe, surmounted by a white staff, stands about $4\frac{1}{2}$ cables north-north-eastward of the above-mentioned beacon; these beacons in line, bearing 031° , lead through the western part of the channel southward of Nocra.

A beacon, consisting of a white pyramid with a black vertical stripe, is situated about $1\frac{1}{2}$ cables westward of the front beacon of the above-mentioned pair and in line with it, bearing 276° , leads through the eastern part of the channel southward of Nocra.

A reef extends about $1\frac{1}{2}$ cables south-eastward of Ras Medat, the south-eastern point of Nocra, and is marked at its south-eastern edge by a can buoy, painted in black and white vertical stripes and surmounted by a cone.

From a point on the mainland, about 8 cables north-north-eastward of Ras Medat, a reef extends about one mile south-south-eastward, and is marked at its western edge, about $8\frac{1}{2}$ cables south-south-eastward of this point, by a beacon, consisting of a staff surmounted by a white ball; Medecheri, an islet lying near the middle of the reef and at its western edge, has a beacon standing on its western side; a shoal, with a least depth of $4\frac{1}{2}$ fathoms (8^m2) over it, lies about 3 cables south-eastward of the beacon marking the western edge of this reef, and is marked on its southern side by a can buoy, painted in black and white vertical stripes and surmounted by a cone.

A beacon stands on a point on the mainland, about $9\frac{1}{2}$ cables north-north-eastward of the north-eastern point of Medecheri (*Lat. $15^\circ 43' N.$, Long. $39^\circ 57' E.$*).

Tidal streams.—The tidal streams in the entrance to Ghubbet Mus Nefit attain a rate of from one to 3 knots. A vessel should enter or leave about three-quarters of an hour before the time of high or low water when the tidal streams do not have a rate of more than one knot, and when the stream is setting in the opposite direction to which the vessel is proceeding.

Anchorage.—Fede anchorage, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), is in the channel on the eastern side of Nocra; a good berth is about $8\frac{1}{2}$ cables north-north-westward of Medecheri, in the middle of the channel, which here is about 2 cables wide. The southern limekiln, on the northern part of Nocra, is not visible from this anchorage but the northern one shows well.

Khor Soguri, an inlet on the western side of the gulf, affords anchorage in depths of about 10 fathoms (18^m3), sand, about $1\frac{1}{2}$ miles south-south-eastward of Ras Medat.

There is also anchorage in depths of from 7 to 11 fathoms (12^m8 to 20^m1), sand and shells, in an inlet, about 3 miles south-eastward of the southern entrance point of Khor Soguri.

Chart 164.

Southern side of Dahlach Kebir.—Coast.—Dangers.—From Ras Malcomma the coast trends about $2\frac{1}{2}$ miles east-south-eastward; between this point and Ras Cambit (Kumbit), a low-lying point $3\frac{1}{2}$ miles farther east-south-eastward, the coast recedes forming a bay,

Charts 164, 8d, 2523.

Chart 164.

which is almost filled with the coastal reef, and is fronted by three islets, Ghidir-as-ale, Erfan, and Eleaf, and several above-water rocks.

A reef extends about $1\frac{1}{2}$ miles westward of Ras Malcommma and as far as half a mile southward of it.

Dahlach Kebir (Dahlak Kebir), a village on the northern side of the bay described above, consists of a number of huts, with two domed tombs westward of it, and a few palms in the vicinity.

From Ras Cambit the coast trends about 22 miles eastward to Ras Shoke.

Scogliere Dahlach (Dahlak reefs) front the coast for a distance of $6\frac{1}{2}$ miles eastward of Ras Cambit, extending at that point to a distance of 4 miles offshore; thence the outer edge of these reefs trends about 16 miles east-south-eastward to a position about 7 miles southward of Ras Shoke; two conspicuous wooded islets, called Seil Umm Ali, lie on the reef about $6\frac{1}{2}$ miles eastward of Ras Cambit and one mile offshore; about $2\frac{1}{2}$ miles east-south-eastward of Seil Umm Ali lies an islet, fringed by rocks. Museri, an island, the eastern extremity of which is situated about 5 miles south-south-westward of Ras Shoke, is composed of coral; an islet lies close off its north-western side and another close southward of its western end, and several above-water rocks lie south-eastward of its eastern end; a shoal, with a depth of $2\frac{3}{4}$ fathoms (5^m0) over it, the position of which is approximate, is charted 4 miles south-eastward of the eastern extremity of Museri, and about $1\frac{1}{2}$ miles further south-eastward is the north-western extremity of a coral shoal which is steep-to, and has a depth of less than 6 feet (1^m8) over it; shoals, with depths of half a fathom and one fathom (0^m9 and 1^m8), lie about $2\frac{1}{2}$ miles eastward and $3\frac{1}{2}$ miles east-south-eastward, respectively, of the eastern extremity of Museri (*Lat.* $15^\circ 30' N.$, *Long.* $40^\circ 22' E.$); a $6\frac{1}{2}$ -fathom (11^m9) patch lies about $1\frac{1}{2}$ miles further south-eastward.

Seil Amber (Anber), a wooded sandy islet, lying about $4\frac{1}{2}$ miles east-south-eastward of the eastern extremity of Museri, is fringed by a reef; a shoal, with a depth of 2 fathoms (3^m7) over it, lies about $3\frac{1}{2}$ miles north-north-westward of Seil Amber, and a shoal, with a depth of $1\frac{1}{2}$ fathoms (2^m7), the position of which is approximate, lies about 3 miles northward of the same islet; shoals, which were reported, in 1940, lie from about $1\frac{1}{2}$ to $1\frac{3}{4}$ miles eastward of this islet.

Islands and dangers south-eastward of Ras Shoke.—Howeit, an islet, situated about $4\frac{1}{2}$ miles east-south-eastward of Ras Shoke, is fringed by a bank which extends about half a mile westward of it; a shoal, with a depth of $4\frac{1}{2}$ fathoms (7^m8) over it, lies about $2\frac{1}{2}$ miles south-eastward of the southern extremity of this islet.

Bu-l-hissar, a low sandy islet, lying $12\frac{1}{2}$ miles south-eastward of Howeit, is the southernmost islet on Banco Dahlach; a rocky bank, with a depth of 4 fathoms (7^m3) over it, extends three-quarters of a mile west-north-westward of it, and shoals, with a least depth of 5 fathoms (9^m1), lie from within 2 to $4\frac{1}{2}$ miles north-westward; a shoal, with a depth of 5 fathoms (9^m1), lies about $1\frac{1}{2}$ miles eastward of this islet.

Charts 164, 143.

Mashilagha, about $13\frac{1}{2}$ miles east-south-eastward of the eastern side of Howeit, is a high rocky islet, with its eastern and southern sides bordered by a reef which extends to a distance of about three-quarters

Charts 8d, 2523.

Water tower.



Massaua lighthouse,
bearing 230° distant
4 miles.

Ras Mudur.

Governor's palace.

Penisola Abd el Cader.

“



Penisola Abd el Cader.

View in two parts, of north-eastern approach to Massaua.
(Original dated 1935.)

Charts 164, 143.

of a mile offshore ; this islet lies at the western edge of a bank, with depths of from 9 to 20 fathoms (16^m5 to 36^m6) over it, which extends about 12 miles east-south-eastward ; there is a least depth of 5 fathoms (9^m1), near the middle of this bank. 5

Chart 143.

Dhu-l-kurush, about 2 miles north-north-eastward of Mashilagha, is a high rocky islet fringed by a reef, which extends to as much as half a mile offshore.

Aucan, situated about 2 miles eastward of Dhu-l-kurush, is a high 10 rocky island, and is almost steep-to ; a shoal, with a depth of 2 fathoms (3^m7) over it, lies close westward of its western extremity. Mojeidi, about half a mile eastward of the eastern extremity of Aucan, is the south-easternmost island on Banco Dahlach, and is high and rocky.

Shoals, with a least depth of 3 fathoms (5^m5) over them, lie from 15 within 7 to 13 miles east-north-eastward of the eastern extremity of Mojeidi ; a 3-fathom (5^m5) patch, lying about 15 miles eastward of the eastern extremity of the same island and at the western end of a shoal, with a depth of 5 fathoms (9^m1), was reported, in 1903, to have 20 a depth of 1½ fathoms (2^m7) over it, and the sea, when moderate, has been seen to break over it ; a 2½-fathom (4^m6) patch and a 3½-fathom (6^m4) patch, situated about one mile apart, lie about 2 miles north-north-eastward and north-eastward, respectively, of the 3-fathom (5^m5) patch just described ; a rock, with a depth of less than 6 feet (1^m8) over it, with two shoals, each having a depth of 4½ fathoms 25 (8^m2), lying about one mile westward and 1½ miles south-south-westward of it, respectively, is situated about 13½ miles east-south-eastward of the eastern extremity of Mojeidi (*Lat. 15° 31' N., Long. 40° 51' E.*).

A reef, on which the British s.s. *Neghileh*, drawing 9 feet (2^m7), 30 struck, in 1902, lies about 15½ miles east-south-eastward of the eastern extremity of Mojeidi ; about 1½ miles south-south-eastward of this reef lies the southern end of a shoal, which has a least depth of 4½ fathoms (8^m2) over it, and extends about 5 miles northward, and a bank, with depths of from 8 to 9 fathoms (14^m6 to 16^m5), about half 35 a mile east-south-eastward of the south-eastern side of this shoal, extends about 2½ miles in a north-easterly direction ; shoals, with depths of 3, 4, 4, and 2½ fathoms (5^m5, 7^m3, 7^m3, and 4^m6), lie about 4 miles southward, 4½ miles east-north-eastward, 10½ miles eastward, and 8 miles south-eastward, respectively, of Neghileh reef. Other 40 shoals, having a least depth of 2 fathoms (3^m7), lie from about 12 to 20 miles east-south-eastward of the same reef.

See caution on page 233.

The islands and dangers on the south-western side of the south-eastern end of Banco Dahlach are described with Canale Sud di Massaua. 45

Charts 164, 8d.

CANALE NORD DI MASSAUA.—**Aspect.**—This channel, which is the continuation southward of the Inner channel on the western side of the Red sea, continued from page 217, extends, from eastward of Taclai, to eastward of the entrance to Porto di Massaua. 50

Chart 8d.

Picco Vittoria (Victoria peak), about 34 miles south-south-westward of Monte Baeki, is dome-shaped and situated at the northern end of

Charts 8d, 2523.

Chart 164.

outline; the main part of the island is 30 feet (9^m1) high and has a few stunted bushes on it, while the northern part attains an elevation of 35 feet (10^m7); on the western side of the island are a few huts; the southern end trends westward and from it a reef, on which lies a low and sandy islet, Sheikh el Abu, extends 2 miles west-north-westward into the channel. Two beacons stand on Harat, one near its north-western point and the other on its south-eastern coast. A rocky bank, which is usually visible and has a least depth of 5 feet (1^m5) over it, extends 6 miles north-north-westward of the northern point of Harat; on this bank, about 1½ miles northward of the northern point of this island, lies a coral islet, Seil Badira, 15 feet (4^m6) high, and nearer the island are three rocks, above water. For a distance of about 5½ miles northward of the northern extremity of this rocky bank are depths of from 4½ to 12 fathoms (8^m2 to 21^m9), extending to within a distance of 6¾ miles of Entesilè.

A detached shoal, with a least depth of 5½ fathoms (10^m1), which being principally sand and surrounded by greater depths shows distinctly, lies about 9 miles north-north-westward of Seil Badira (*Lat.* 16° 11' N., *Long.* 39° 26' E.), and a shoal, with a depth of 2¾ fathoms (5^m0), the position of which is approximate, lies 3 miles north-eastward of the same islet; between this 5½-fathom (10^m1) shoal and Sheikh el Abu are some banks, with a least depth of 8 fathoms (14^m6). A shoal, with a depth of 4 fathoms (7^m3), lies about one mile south-eastward of Sheikh el Abu, and immediately southward of this shoal a bank, with depths of from 11 to 20 fathoms (20^m1 to 36^m6), sand and coral, extends about 5½ miles south-south-eastward.

A light is exhibited, at an elevation of 61 feet (18^m6), from a framework structure, 56 feet (17^m1) in height, painted in black and white horizontal bands, situated on the western point of Sheikh el Abu. *See sketch.*

Melahat, about 18½ miles southward of Ras Kuba, also its locality, are backed by salt water swamps, beyond which are ranges of low barren sand hills.

Some saltworks stand on the coast about 7 miles south-south-eastward of Melahat and, being well lighted at night, make a good landmark.

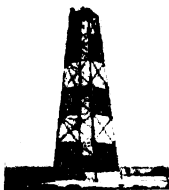
Ras Turrec (Turrik) is situated about 11 miles south-south-eastward of Melahat; several shoals, having a least depth of 3¾ fathoms (6^m9), and the positions of which can best be seen on the chart, lie within a distance of about 3½ miles northward to 3 miles eastward of this point.

Dul-baut, Baradu, Daret, and Dehel, islands lying on the north-eastern side of the fairway, about 12 miles eastward of Ras Turrec, are described on page 240.

Ras Harb, on which stands a white framework beacon, 42 feet (12^m8) in height, is low, rounded, and sandy; the coastal bank, with depths of less than 3 fathoms (5^m5), extends about three-quarters of a mile from it. Large masses of floating weed have been observed in this neighbourhood.

Oreste shoal, lying about 2½ miles eastward of Ras Harb, has a depth of 3¾ fathoms (6^m9), sand and coral, over it.

Emberemi (Eberemi) tomb, about 4½ miles south-south-westward of



Sheikh el Abu lighthouse.

Chart 164.

Ras Harb, has a domed roof, and is conspicuous from northward ; in clear weather it can be seen from a considerable distance and even in hazy weather it can usually be identified.

Charts 460, 164.

Ras el Garara, on which stands a beacon, is situated about 8 miles south-south-eastward of Ras Harb.

Chart 460.

A reef extends about $2\frac{1}{2}$ cables south-eastward of Ras Dogon, situated 6 cables southward of Ras el Garara, and from the north-eastern extremity of Penisola Abd el Cader (Abd el Kader peninsula) which forms the southern entrance point of Khor Dakliyat, about $7\frac{1}{2}$ cables southward of Ras Dogon, a reef extends about $3\frac{1}{2}$ cables northward. A rock, named Dakliyat, is situated near the middle of this latter reef.

Some wrecks, the upperworks of which were showing, in 1942, lie in the entrance to Khor Dakliyat (*Lat. $15^{\circ} 38' N.$, Long. $39^{\circ} 29' E.$*).

Charts 164, 8d.

Currents.—See page 232.

In February, 1887, in the channel westward of Difnein, a current setting westward at the rate of one knot, was experienced.

Tidal streams.—In Canale Nord di Massaua, the tidal streams set southward during the rising tide and northward during the falling tide, and they are often very regular ; at other times, the south-going stream does not cease but is only checked by the north-going stream.

Directions.—A vessel from northward bound through Canale Nord di Massaua should pass about 10 miles eastward of Döm esh Sheikh islet and thence steer a southerly course towards Taclai lighthouse until about 5 miles off the coast. She should then keep from 3 to 5 miles offshore and pass between Gannet bank and Cavet light-structure, and steer southward through the Inner channel to eastward of Porto di Massaua. Caution is necessary, as the area between the Suäkin group and Difnein has not been closely examined except for a distance of about 10 miles offshore from Ras Kasar southward.

The appearance of the land and most prominent marks is described on pages 229-230 and 249-250 ; the general prevalence of thick haze in winter, however, often renders the approach from north-eastward to Canale Nord di Massaua, by the aid of landmarks, difficult, and sometimes impossible ; as a rule, when the haze is thickest the sky is clear and astronomical observations can be obtained. When clouds prevail (usually with a northerly wind) the land is tolerably clear, though the highest peaks may be capped.

It must be borne in mind that the reefs lying close off the mainland do not always show, and that the reefs on the eastern side of the channel are steep-to.

Canale Sud di Massaua is continued on page 262.

Anchorage in Canale Nord di Massaua.—There is generally anchorage throughout the channel, off its western side, though in most places there is little or no shelter from south-easterly winds ; the holding ground is generally good, and the space is too confined for much sea to get up.

Chart 164.

During northerly winds fairly good anchorage may be obtained south-westward of Difnein, about $2\frac{1}{2}$ cables offshore, in depths of about 11 fathoms (20^ml).

Charts 164, 8d, 2523.

Chart 164.

Indifferent anchorage might be obtained about three-quarters of a mile north-westward of Entesilè in depths of 12 fathoms (21^m9), coral, but the depths north-westward increase rapidly.

- 5 There is anchorage in a depth of 8 fathoms (14^m6), sheltered from southerly and easterly winds, westward of the southern part of Harat and 1½ miles northward of Sheikh el Abu, with the north-western extremity of Harat in line with the western extremity of Seil Badira, bearing 358°.
- 10 Small vessels with local knowledge can obtain anchorage in a depth of about 8 fathoms (14^m6), sand and mud, partially sheltered from northerly winds, with the south-western extremity of Harat bearing 004° and Sheikh el Abu light-structure (*Lat.* 16° 02' N., *Long.* 39° 26' E.) 285°.
- 15 There is anchorage around Dul-baut, at a suitable distance, in depths of from 6½ to 16 fathoms (11^m9 to 29^m3).

Chart 460.

- Khor Dakliyat.—Dangers.—Beacons.—Buoys.**—Khor Dakliyat, also known locally as Khor Gurgusum, is encumbered with obstructions; the entrance channel is about 2½ cables wide.

A mole extends from the southern entrance point to a rock, named Dakliyat, and thence north-westward to the edge of the coastal reef.

- 25 A shoal, which dries, lies about 1½ cables southward of the head of the mole, and is marked on its western side by a pole, surmounted by a cylinder painted in red and white horizontal bands, and on its eastern side by a pole, surmounted by a sphere painted in black and white horizontal bands; an obstruction, with a depth of 3 feet (0^m9) over it, lies about one cable west-north-westward of the western beacon.
- 30 A spit, with a least depth of 2 feet (0^m6) over it, extends about 5 cables eastward from the western shore of the south-western part of Khor Dakliyat.

- Four shoals, having a least depth of 8 feet (2^m4), two of which are marked by white conical buoys, lie within a distance of from 4½ to 35 6 cables from the western shore of Khor Dakliyat.

- Beacons.**—Beacons, about 4 cables apart, stand at the head of Khor Dakliyat; each consists of an iron post, surmounted by a cylinder painted in black and white stripes, about 30 feet (9^m1) in height; the beacons in line, bearing about 270°, lead through the 40 entrance.

A beacon stands on the north-western shore of the bay about one mile north-westward of the mole head and 3 cables south-westward of a cement works with a conspicuous chimney.

- A beacon, 36 feet (11^m0) in height, is situated on the north-western 45 side of the harbour, about 3½ cables north-north-westward of the conspicuous chimney.

Anchorage in Khor Dakliyat.—Good anchorage can be obtained about 1½ cables west-north-westward of the head of the mole in depths of from 37 to 38 feet (11^m3 to 11^m6), mud.

- 50 Light draught vessels can obtain anchorage in the north-western arm of the bay, in depths of from 22 to 26 feet (6^m7 to 7^m9).

Prohibited anchorage.—A prohibited anchorage, the limits of which are indicated by pecked lines on the chart, is situated eastward of the entrance to Khor Dakliyat.

Chart 460.

PORTO DI MASSAUA.—Porto di Massaua is entered between the southern extremity of Penisola Abd el Cader, on the northern side, and Ras Mudur, the north-eastern extremity of the island of Massaua on the southern side; Penisola Gherar, the eastern extremity of which is situated 4 cables westward of Ras Mudur, forms the northern side of the inner part of the harbour, and the island of Taulud its south-eastern side. These peninsulas and islands are connected with each other and with the mainland by reefs, which dry, and on which are causeways. Strong south-easterly winds cause a swell in the harbour and the causeways are sometimes flooded.

Seno Gherar (*Lat. 15° 37' N., Long. 39° 28' E.*), close within the northern entrance point of the harbour, has a width of from 300 to 400 feet (91^m4 to 121^m9) in the fairway, and at the head of the outer harbour a narrow channel leads into Seno Taulud, the inner harbour.

Landmarks.—The most conspicuous objects to a vessel approaching the harbour are a square signal tower about 1½ cables westward of Ras Mudur; the Governor's palace, a white building with a dome, about 5½ cables further west-south-westward; the light-tower 1½ cables south-south-eastward of Ras Mudur; and Sheikh Said, an island, 8½ cables southward of this light-tower. *See view facing page 248.*

Lights.—Beacons.—A light is occasionally exhibited from the head of a pier projecting from the eastern side of Penisola Abd el Cader.

A light is also occasionally exhibited from the head of the breakwater southward of Ras Abd el Cader (Abd el Kader), the eastern extremity of Penisola Abd el Cader.

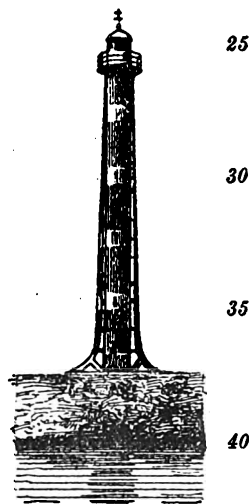
Massaua light is exhibited, at an elevation of 85 feet (25^m9), from a black circular iron tower, with white horizontal bands, 77 feet (23^m5) in height (*see sketch*), situated 1½ cables south-south-eastward of Ras Mudur. This light is extinguished.

A beacon, consisting of an iron framework structure with a masonry foundation, 32 feet (9^m8) in height, is situated just southward of the root of Pontile Martini, at the northern end of the island of Taulud, and a similar beacon, 57 feet (17^m4) in height, stands half a cable south-westward of the former beacon. These beacons were reported, in 1923, to be difficult to identify, on account of trees around them.

Dangers.—A reef extends about 1½ cables south-eastward of the northern entrance point, and a reef extends about the same distance north-north-eastward and eastward of Ras Mudur; the southern reef is the more difficult to distinguish.

A wreck, the upperworks of which were showing, in 1943, lies about one cable eastward of the head of Pontile Martini, and the outer harbour was encumbered with numerous sunken wrecks and obstructions, the positions of which can best be seen from the chart.

A shallow bank extends to as much as 2 cables eastward of the north-eastern side of the island of Taulud.



Massaua lighthouse.

Chart 460.

A wreck, the mast and funnel of which were showing, in 1943, lies just within the entrance to Seno Taulud.

Seno Taulud is bordered by reefs, and several shoals, with a least 5 depth of 10 feet (3^m0), lie from within about 1½ to 4 cables from the head of this bay. The causeway connecting the island of Taulud with the mainland crosses the reef at the head of Seno Taulud.

Anchorage.—Mooring buoys.—Anchorage may be obtained in the outer harbour (*Lat. 15° 37' N., Long. 39° 29' E.*) in depths of from 10 6 to 9 fathoms (11^m0 to 16^m5), mud, good holding ground, but the swinging room is restricted.

There are several mooring buoys in the outer and inner harbours.

Breakwaters.—Quays.—A breakwater extends south-eastward from the northern entrance point and another northward from Ras 15 Mudur.

A stone quay, which is connected with the railway and has three 5-ton travelling cranes, extends along the north-western side of the island of Massaua, and there are bollards at short intervals so that vessels can haul their sterns in towards the quay; the maximum draught for vessels berthing at this quay was, in 1941, 23 feet (7^m0). 20 Work was in progress, in 1939, for extending this quay north-eastward to the southern breakwater and reclaiming the area within.

Several piers and wharves extend from the shores of Seno Gherar and from the shores of the inner and outer harbours.

25 **Directions.**—The beacons on the island of Taulud in line, bearing 243½°, lead through the fairway of the entrance channel and through the middle of the harbour to the anchorage, but, in 1941, a wreck lay in the entrance on the leading line, necessitating great care in passing northward of it and of a buoy moored close north-westward.

30 During the summer, when the sea breezes are usually light, sudden squalls blow from the hills, and vessels should be moored if remaining many days; in winter strong offshore winds are rare.

Town.—Massaua town is situated on the island of Massaua and, in 1940, had a population of about 15,000, of which about 5,000 were 35 Europeans. The Harbour Master's office, with a flagstaff close to it, stands at the north-eastern end of the town. The causeways connecting Massaua with the island of Taulud and the latter with the mainland are stone and about 30 feet (9^m1) wide; they carry a roadway with a railway on one side of it, and footpaths.

40 Massaua is connected to the general railway and telegraph systems of Eritrea. There is a radio station here; see page 25.

Port facilities.—There is a small stock of coal, also small stocks of Diesel and fuel oil.

Fresh water is supplied in two 30-ton lighters, which are fitted with 45 hand pumps.

There is a slipway, see Appendix I.

There is a 90-ton floating crane and some fixed cranes, with a lifting capacity of from 5 to 7 tons; a few lighters are available.

There is a hospital on Penisola Abd el Cader.

50 **Trade and shipping.**—The chief exports, in 1943, were coffee, linseed, beeswax, shells, pearls, hides, salt. The principal imports were cotton and silk goods, hollow and glass ware building materials, and provisions.

In 1929, vessels amounting to a total tonnage of 597,631 entered 55 this port.

Charts 164, 8d, 2523.

Chart 460.

Climate.—The climate of Massaua is intensely hot and generally not unhealthy, but fevers appear to be prevalent about the end of April and the early part of May.

Massaua South anchorage.—**Dangers.**—**Buoys.**—**Beacons.**— 5
This anchorage (*Lat. 15° 36' N., Long. 39° 27' E.*) is in the bay south-westward of the island of Taulud and is entered between the southern end of that island and a point about $1\frac{1}{4}$ miles south-westward, the navigable channel being about 4 cables wide between the reefs on either side, which extend, in places, to as much as 4 cables offshore 10
Sheikh Said, a sandy island covered with mangroves, lies on the western side of a reef, which dries, and which extends about $3\frac{1}{2}$ cables north-north-eastward of its northern extremity and $2\frac{1}{2}$ cables south-eastward of its south-eastern side.

Between Sheikh Said and the reef extending eastward and south- 15 eastward of the island of Taulud is an inlet with moderate depths; a spherical buoy is moored on the western side of this inlet at its southern end. A shoal, with a depth of 8 feet (2^m4) over it, lies about $2\frac{1}{2}$ cables westward of the northern extremity of Sheikh Said.

A bank, with depths of less than 3 fathoms (5^m5), extends about 20 2 cables south-eastward of the south-eastern edge of the reef extending south-eastward of Sheikh Said, and close off the southern edge of this bank are two shoals, lying close together, with least depths of 10 and 15 feet (3^m0 and 4^m6) over them, respectively; a can buoy is moored about half a cable southward of these shoals. 25

Two shoals, about $1\frac{1}{2}$ cables apart, with depths of 10 and 15 feet (3^m0 and 4^m6) over them, lie on the south-western side of the entrance to the anchorage about 7 cables south-westward of the south-western extremity of Sheikh Said; a conical buoy, S.I., is moored on the northern edge of the south-eastern shoal, and a conical buoy is moored 30 near the centre of the north-western shoal.

A 3-fathom (5^m5) patch lies about 6 cables north-eastward of the south-western entrance point of the bay.

Shoals, with least depths of 9, 5, and 5 feet (2^m7 , 1^m5 , and 1^m5) over them, lie on the south-western side of the bay about $5\frac{1}{4}$ and 6 cables 35 south-westward, and $6\frac{3}{4}$ cables west-south-westward, respectively, of the southern extremity of the island of Taulud; they are marked by conical buoys S.II, S.III and S.IV.

A shoal, with a depth of 3 feet (0^m9) over it, lies about 3 cables south-westward of the southern extremity of the island of Taulud, 40 and is marked at its western edge by conical buoy D3.

Within about half a mile from the head of the bay are other reefs and shoals, the positions of which can best be seen on the chart.

In 1942, this anchorage was encumbered with sunken wrecks, and several buoys were moored in addition to those already mentioned; 45 obstructions were in position across the entrance; the positions of all these can best be seen from the chart.

Two black pyramidal beacons, each with a white vertical stripe, are situated at the head of the bay; the front beacon, 26 feet (7^m9) in height, stands about one mile westward of the southern extremity 50 of the island of Taulud, and the rear beacon, 36 feet (11^m0) in height, stands about $3\frac{3}{4}$ cables north-westward of the front beacon. These beacons, when in line, bearing $307\frac{1}{2}^\circ$, lead through a gap in the obstructions and to the anchorage, which is in a depth of about 6 fathoms (11^m0). 55

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Chart 460.

A pair of beacons (*Lat. 15° 36' N., Long. 39° 26' E.*), about one cable apart, stands on the western side of the bay about 5 cables west-south-westward of the front beacon described above; they are in line, bearing 271°.

Piers.—Two piers extend from the head of the bay, and another pier extends from its south-western side; a floating pipeline lies off the head of the latter pier.

Prohibited anchorage.—**Buoy.**—Anchorage is prohibited in an area, indicated by pecked lines on the chart, between the islands of Massaua and Sheikh Said; a spherical buoy is moored near the western limit of this area.

Chart 164.

SHEIKH SAID TO RAS CORÀLI.—**Aspect.**—Between Sheikh Said and Ras Nauret, $4\frac{3}{4}$ miles south-eastward, is Baia di Archico (Harkiko bay); the shores of this bay are low, and the plain within rises gently to the base of the hills about 2 miles inland. Archico (Harkiko), a large village on the western shore of the bay, has a mosque and several white houses; the mosque, a quadrangular white building, can be seen from a considerable distance.

Ras Amas, $3\frac{1}{4}$ miles east-south-eastward of Ras Nauret, is low, rounded, and coral.

Monte Ghedem (Jebel Guddam), $6\frac{3}{4}$ miles south-south-westward of Ras Amas, is an isolated wooded mountain range; it is conspicuous and, in clear weather, may be seen from northward of Harat; it is irregular in shape and rounded, with several small peaks of nearly the same elevation. The summit, a small pyramidal peak conspicuous from northward, is situated nearer the eastern side of this range.

The plain in the vicinity of Monte Ghedem is dotted with small villages, and affords pasture for sheep and cattle.

Between Ras Amas and Ras Coràli (Korali), the northern extremity of Penisola di Buri, $16\frac{1}{4}$ miles eastward, is the entrance to Golfo di Zula.

Dissei (Disei), an island with abundant vegetation, 7 miles westward of Ras Coràli, has a series of conical peaks, of which Monte Dissei, $2\frac{3}{4}$ miles from its northern extremity, is the summit; Monte Aleita, on the eastern side of Golfo di Zula, $9\frac{1}{4}$ miles southward of Monte Dissei, appears wedge-shaped, with the bluff north-westward, when in line with Dissei. Monte Dule (Jebel Dulhe), the summit of a range of hills extending north-north-westward, $9\frac{1}{2}$ miles south-south-eastward of Ras Coràli, is conical, and forms a good landmark; it must not be mistaken for Monte Dissei which has a similar appearance from northward but is only about half its elevation. The village of Dissei (Disei) stands on the eastern side of this island.

Off-lying islet and dangers.—**Beacon.**—**Light.**—Secca Mugiunia (Mujunia reef), a rocky patch lying $8\frac{1}{2}$ miles east-north-eastward of Ras Amas, is awash, and is marked by a beacon, consisting of an iron triangular framework pyramid, on a masonry base, 21 feet (6^m4) in height.

Banco Erc Abdulla-Abu-Madda (Abdulla-Aba-Madda bank), lying in the fairway, $5\frac{1}{4}$ miles east-north-eastward of Secca Mugiunia, has a least depth of 7 fathoms (12^m8) over it.

Madote (*Lat. 15° 35' N., Long. 39° 46' E.*), a sandy islet, 8 feet (2^m4)

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Chart 164.

high, 3 miles east-south-eastward of Secca Mugiunia, is situated on the western side of a reef, which extends three-quarters of a mile northward and half a mile southward of it; the southern edge of this reef is almost connected with the reef extending northward of the island of Dissei.

A light is exhibited, at an elevation of 64 feet (19^m5), from a square tower, painted in black and white horizontal bands, 54 feet (16^m5) in height, situated on the south-western part of Madote. *See sketch.*

*Madote lighthouse.*

Anchorage.—There is anchorage in depths of from 9 to 11 fathoms (16^m5 to 20^m1), sand, about three-quarters of a mile north-eastward of the shoalest part of Secca Mugiunia, which is generally visible.

Anchorage can be obtained off the north-western side of Madote, in depths of from 10 to 15 fathoms (18^m3 to 27^m4), with the middle of the islet in line with Monte Dule, bearing about 145°; this anchorage must be approached with caution as the ledge is very narrow and the depths decrease quickly.

Coast.—Dangers.—Beacon.—A jetty extends from the western shore of Baia di Archico, eastward of the mosque.

A shoal, with a depth of 3 fathoms (5^m5), coral, over it, lies 5 cables offshore and 6 cables south-eastward of the head of this jetty.

A beacon stands on Ras Nauret.

A shoal, with a depth of 7 fathoms (12^m8) over it, lies one mile north-north-eastward of Ras Nauret.

Ras Coràli is indented on its western side, the approach to which is encumbered by islets and reefs lying from about three-quarters of a mile to 3½ miles offshore.

Golfo di Zula.—Golfo di Zula extends southward of an imaginary line joining Ras Amas and Ras Coràli, between the mainland and the western side of Penisola di Buri; both sides of this gulf are fringed by reefs which extend to a distance of about one mile offshore near the middle of its western side, and about the same distance offshore from its eastern side, about 10 miles south-south-westward of Ras Coràli.

Aspect.—Beacons.—Between Ras Amas and Malcatto (Malkatto), 18½ miles south-south-eastward, the land rises gently from the coast to Monte Ghedem and other high land. Penisola di Buri, of which Ras Artau (Hartau), 8½ miles south-westward of Ras Coràli, is its north-western extremity, is generally low; Monte Dule and Monte Aleita are described on page 258; Monte Abdur, 10½ miles south-south-eastward of Monte Aleita, lies one mile from the coast.

Monte Jâ-llua, 7 miles south-south-westward of Monte Abdur, is situated 2 miles inland from the head of the gulf, at the western end of a range which extends eastward, terminating in Monte Gussurali.

The villages of Alibarate, Macalille, and Nasiracurra are situated on the eastern side of the gulf, 2½ miles south-south-eastward of Ras Artau, 1½ miles south-eastward of Monte Aleita, and 1½ miles south-south-westward of Macalille, respectively; Ras Nasiracurra, the southern extremity of the promontory on which stands Nasiracurra, is the western entrance point of Melita bay (*Lat. 15° 16' N., Long. 39° 48' E.*).

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Chart 164.

The ruins of the ancient Greek city of *Adulis* are situated on the left bank of the river Hadasc, 3 miles west-north-westward of Malcatto, and the modern village of Zula, about three-quarters of a mile south-eastward of Adulis, lies a little distance from the right bank of this river.

A jetty, on the head of which is a red iron post with a lantern, 26 feet (7^m9) in height, projects from the shore immediately southward of Malcatto.

In clear weather a good view of the Abyssinian mountains is obtained from the anchorage eastward of Malcatto; the passes cleave them from north to south so that the ridges appear to rise one above another in succession; the plain around Malcatto looks green, but on landing all illusion as to its nature is at once dissipated. A sandy clay plain, intersected by dry water courses, and overgrown with plants and patches of coarse grass, extends from the coast to the mountains.

There is a beacon in At Fat village, which stands near the coast, $7\frac{1}{4}$ miles south-south-westward of Malcatto.

Arafali (Arafale), a village situated on the coast, at the head of the gulf, 5 miles south-eastward of At Fat, is a collection of mud huts at the mouth of a valley; close southward of this village are three conspicuous extinct craters.

Islands and dangers in Golfo di Zula.—Beacons.—A shoal, with a least depth of $2\frac{3}{4}$ fathoms (5^m0) over it, lies $1\frac{3}{4}$ miles eastward of Ras Amas and $1\frac{1}{4}$ miles offshore; its position is indicated by discoloured water.

The aspect of the island of Dissei is described on page 258; a reef extends $4\frac{1}{4}$ miles northward of this island and a quarter of a mile eastward of its south-eastern point. Canale Dissei (Dissei channel), which is deep, separates it from Penisola di Buri.

Ota (Hotha), an island on the eastern side of Canale Dissei, $3\frac{1}{4}$ miles eastward of the northern extremity of the island of Dissei, has a flat summit; it is connected with Penisola di Buri, $1\frac{3}{4}$ miles southward, by a reef, which dries, and on which lie two islets; a reef extends $1\frac{1}{2}$ miles north-eastward of the north-eastern end of this island, and the bay between it and Ras Coràli is mostly shoal, with patches of rock. A beacon stands on the centre of this island.

Seil, an islet lying in the fairway, $1\frac{3}{4}$ miles eastward of Monte Dissei, is 56 feet (17^m1) high, volcanic, and fringed by a reef; it may be passed on either side.

Secca Indore, a rocky shoal, with a depth of one fathom (1^m8) over it, lies $2\frac{1}{4}$ miles southward of Seil and one mile offshore; it is reported that this shoal cannot be distinguished, consequently a vessel proceeding through Canale Dissei should keep close to the coastal reef, which in this neighbourhood is steep-to and extends about 2 cables offshore, to avoid the shoal. Scogli Est (East rocks), 3 cables westward of Secca Indore, are two white rocks, above water, and are fringed by a reef; Scogli Ovest (West rocks), lying 5 cables west-north-westward of Scogli Est, are two white rocks, 13 feet (4^m0) high, and are fringed by a reef; a rocky shoal, with a depth of $1\frac{3}{4}$ fathoms (3^m2), lies about midway between Scogli Ovest and the southern end of the island of Dissei (Lat. $15^{\circ} 27' N.$, Long. $39^{\circ} 45' E.$).

A shoal, with a least depth of 2 fathoms (3^m7) over it, lies $1\frac{1}{2}$ cables offshore, westward of Ras Nasiracurra, and a 7-fathom (12^m8) patch, about $3\frac{1}{2}$ cables further southward.

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Chart 164.

The coast between Ras Nasiracurra and Dolphin cove, $6\frac{3}{4}$ miles south-south-eastward, is fringed by a reef which extends to as far as three-quarters of a mile offshore; a shoal, with a depth of 4 fathoms (7^m3) over it, lies 4 miles south-south-eastward of Ras Nasiracurra and three-quarters of a mile offshore, and a rocky shoal, with a depth of less than 6 feet (1^m8), lies three-quarters of a mile farther south-south-eastward. 5

Chart 1109, plan of Melita bay.

Melita bay, the shores of which are mangrove swamps backed by 10 a grassy plain, is almost filled by a coral reef; Cliff point, about 3 cables west-north-westward of the western entrance point, is fringed by a bank, the outer edge of which is awash while the inner part remains covered.

A shoal, with a depth of $3\frac{3}{4}$ fathoms (6^m9) over it, lies in the fairway, 15 about 5 cables south-eastward of Ras Nasiracurra; its position is approximate.

A beacon, 10 feet (3^m0) in height, stands on the edge of the grassy plain at the north-eastern side of the bay.

Chart 1109, plan of Dolphin cove.

Dolphin cove is a bight in the coastal reef; the shore of this cove is low and flat, but about 4 cables inland the land rises suddenly to a rocky ridge, 492 feet (150^m0) high. South-eastward of the cove lie ridges of black lava, thickly covered with brushwood; northward the country is more open and sandy. 20 25

Chart 164.

A shoal, with a depth of $2\frac{3}{4}$ fathoms (5^m0) over it, lies off Arafali village, about 4 cables offshore.

Chart 8d, plan of Village bay.

Anchorage in Golfo di Zula.—Beacons.—There is good anchor- 30 ages off the entrance to a small bay on the eastern side of the island of Dissei, $2\frac{1}{4}$ miles from its northern extremity, in depths of about 8 fathoms (14^m6), sand, with the northern entrance point of the bay bearing 290° and Monte Dissei 218° . Care is required in approaching this anchorage as the depths decrease rapidly; a reef, which is nearly 35 awash, lies on the southern side of the entrance to the bay, about $3\frac{1}{2}$ cables east-north-eastward of Monte Dissei and 2 cables offshore.

Chart 164.

Anchorage can be obtained about 5 cables offshore, eastward of the village of Malcatto, in depths of about 11 fathoms (20^m1). 40

Chart 1109, plan of Melita bay.

Anchorage can be obtained in the entrance to Melita bay, sheltered from all except southerly or south-westerly winds, in depths of about 10 fathoms (18^m3), sand and coral.

Chart 1109, plan of Dolphin cove.

Dolphin cove affords anchorage in depths of 7 fathoms (12^m8), sand and mud, good holding ground, just within the entrance points. There are two beacons at the head of this cove (*Lat.* $15^\circ 08' N.$, *Long.* $39^\circ 49' E.$) which, when in line, bearing 085° , lead through the fairway to the anchorage; the front beacon stands on a ridge of sandhills 50 about $2\frac{1}{2}$ cables inland, and the rear beacon, a very small one, is situated on the summit of the 492-foot (150^m0) ridge.

Chart 164.

Vessels can obtain anchorage northward of Arafali in depths of

Charts 164, 8d, 2523.

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Chart 164.

from 5 to 20 fathoms (9^m1 to 36^m6), mud. Care should be taken to avoid the shoal, with a depth of 2 $\frac{1}{2}$ fathoms (5^m0) over it, lying in this vicinity.

5 Charts 164, 143.

CANALE SUD DI MASSAUA.—Aspect.—This channel, which is the continuation southward of the Inner channel on the western side of the Red sea, continued from page 253, extends between the mainland, from Ras Coràli to Sha'ab Shakhs, 88 miles south-eastward, on the south-west, and Dahlach Kebir and the dangers extending south-eastward of that island, on the north-east.

For aspect *see* page 231.

A range of volcanic mountains extends from the head of Golfo di Zula to southward of Sha'ab Shakhs, where it closes the coast; its highest summit is Dalrio (Volcano Alid), 10 $\frac{1}{2}$ miles south-eastward of Monte Jâ-Ilua. Monte Ghilifilli, situated 18 $\frac{1}{2}$ miles eastward of Dalrio, and Monte Maalagu (Mahalago), 14 miles south-eastward of Monte Ghilifilli, are also conspicuous.

Currents.—*See* page 232.

Tidal streams.—In Canale Sud di Massaua the tidal streams are weak and variable; they appear to meet in the vicinity of Sciumma, an island 6 $\frac{1}{2}$ miles east-north-eastward of Ras Coràli.

Winds and weather.—*See* page 232.

Chart 164.

25 North-western part.—Islands and dangers.—Lights.—Beacons.—Buoys.—The channel, between the northern part of Penisola di Buri and the south-western side of Dahlach Kebir, is divided into three passages by Assarca (Assarka), two islets lying about 3 miles east-north-eastward of Ras Coràli, and Sciumma, an island 3 $\frac{1}{2}$ miles farther eastward. These passages are deep, and the reefs fringing the mainland and islands are steep-to and visible; the land on both sides consists of coral cliffs, about 6 feet (1^m8) high, which are well defined.

Dilemmi, an island, 25 feet (7^m6) high, 2 $\frac{1}{2}$ cables eastward of the northern end of Penisola di Buri, lies at the edge of the coastal reef fringing this peninsula; a beacon stands on the north-eastern coast of this island. A shoal, with a least depth of 4 $\frac{1}{2}$ fathoms (7^m8), coral, over it, lies 1 $\frac{1}{2}$ miles eastward of Ras Hararti, the south-eastern point of this island.

40 Dilemmi is partially wooded, and on its western side is a village; the central part of the island affords pasture for sheep and cattle.

The Assarca islets (*Lat.* 15° 32' N., *Long.* 39° 55' E.) are two in number, the north-western being 15 feet (4^m6) high and the south-eastern 20 feet (6^m1); the north-western islet is mostly bordered by low cliffs, and the south-eastern islet is sandy and covered with low scrub. Shoal water, with a least depth of 8 feet (2^m4), extends to as far as about a quarter of a mile from the south-eastern end of the north-western islet, and a reef, awash, extends about half a mile south-eastward of the south-eastern islet; a 4 $\frac{1}{2}$ -fathom (8^m2) patch lies about three-quarters of a mile south-south-eastward of the south-eastern islet and a shoal, with a depth of 5 $\frac{1}{2}$ fathoms (10^m1) over it, about 1 $\frac{3}{4}$ miles farther eastward.

A light is exhibited, at an elevation of 42 feet (12^m8), from a frame-

Charts 8d, 2523.

Chart 164.

work structure, 30 feet (9^m1) in height, painted in black and white horizontal bands, situated on the north-western Assarca islet.

The principal passage is between the Assarca islets and Sciumma ; the fairway is north-eastward of the shoal, with a depth of 5½ fathoms (10^m1), described above. The passage between Sciumma and Dahlach Kebir is also available.

Sciumma is 44 feet (13^m4) high and is fringed by a reef which extends to as far as half a mile from its south-western side and about the same distance from its north-eastern side ; two small beacons, which are difficult to distinguish, stand at the north-western end of this island.

A light is exhibited, at an elevation of 108 feet (32^m9), from a white cylindrical iron tower, 77 feet (23^m5) in height, situated near the southern extremity of Sciumma.

Chart 164, plan of Port Smyth.

Port Smyth, an opening in the coastal reef in the middle of the south-western side of Sciumma, is entered between the extremity of the reef on the south-eastern side, which is marked by a pole beacon, surmounted by a cylinder, 8 feet (2^m4) in height, and a one-fathom (1^m8) coral patch, marked by a pole beacon, 8 feet (2^m4) in height, which lies three-quarters of a cable south-eastward of the extremity of the reef on the north-western side ; the entrance is about 120 yards (109^m7) wide, with a least depth of 3½ fathoms (6^m9) in it. A rocky patch, nearly awash, and marked by a pole beacon, surmounted by a cylinder, lies about one cable north-eastward of the south-eastern entrance point.

Two buoys, one painted red and the other green, are situated on the north-western and south-eastern sides of the entrance, respectively ; there are also two buoys, about a quarter of a cable apart, moored near the edge of the reef on the north-western side of the entrance.

A pair of beacons stands at the head of Port Smyth (*Lat.* 15° 32' N., *Long.* 40° 00' E.) ; the front beacon, a white stone pyramid, 6 feet (1^m8) in height, surmounted by a white staff, 5 feet (1^m5) in height, stands on the coast, and the rear beacon, a stone pyramid, 6 feet (1^m8) in height, painted in black and white vertical stripes, and surmounted by a white staff, 5 feet (1^m5) in height, is situated about 3½ cables north-eastward of the front beacon.

Chart 164.

The southern side of Dahlach Kebir is described on pages 247-248.

From Ras Corali the coast, which is low and fringed by a reef extending to as far as 5 cables offshore, trends 16 miles south-eastward to Ras Ererir.

A 2½-fathom (4^m6) rocky patch lies 8 miles south-eastward of the southern extremity of Dilemmi and 1½ miles offshore.

Umm Namūs, an islet 4½ miles north-north-westward of Ras Ererir and 1½ miles offshore, with conspicuous white sandy patches at both its ends, is fringed by a reef, which extends 4 cables northward and 7½ cables east-south-eastward of the islet.

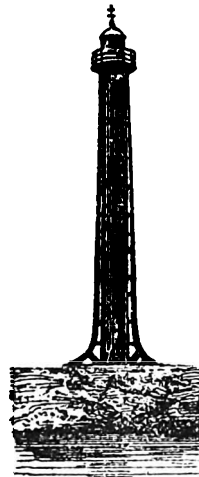
*Sciumma lighthouse.*

Chart 164.

Fawn shoal, with a depth of $4\frac{3}{4}$ fathoms (8^m7) over it, lies 4 miles north-eastward of Ras Ererir.

Between Ras Ererir and Ras Andadda, 31 miles south-eastward, is the entrance to Baia di Ouachil (Howakil bay); this bay is encumbered with islands and reefs. Under the lee of the outer islands are several good anchorages but great caution is necessary in approaching them.

There are numerous mountains and hills inland in this vicinity, some in ranges, others being isolated volcanic cones and table-hills. Monte Achelo (Ichelo), on the south-western shore of the bay, 20 miles southward of Ras Ererir, is a small but conspicuous table-hill. In very clear weather the Abyssinian mountains, which rise in successive ranges to an elevation of about 10,000 feet ($3,048^m0$), may be seen.

Dahleid, an islet $5\frac{1}{2}$ miles south-eastward of Ras Ererir, is fringed by a reef, which extends about half a mile from its north-eastern and south-western ends; a shoal, with a depth of $4\frac{3}{4}$ fathoms (8^m7) over it, lies three-quarters of a mile south-westward of its south-western end.

Adjuz, an island $3\frac{3}{4}$ miles south-eastward of Dahleid, is coral, wooded, and apparently level; a few huts stand on its southern side. The island is fringed, in places, by reefs which are visible. Banco Dahleid, with depths of less than 6 feet (1^m8) over it, lies $1\frac{1}{4}$ miles westward of Adjuz and is generally visible.

Secca Tahara, lying three-quarters of a mile southward of the south-western extremity of Adjuz, is a sandbank, which dries; there are several other rocks and shoals in this vicinity, the positions of which can best be seen on the chart.

A bank, with a depth of 10 fathoms (18^m3) over it, lies $2\frac{3}{4}$ miles north-eastward of the eastern extremity of Adjuz.

Ouachil (Howakil), an island $1\frac{1}{2}$ miles southward of Adjuz, attains an elevation in its south-eastern part of 706 feet (215^m2); this summit, on which stands a beacon, is a sharp volcanic peak; the north-eastern half of the island is low coral. Laksu (*Lat.* $15^\circ 13' N.$, *Long.* $40^\circ 18' E.$), an islet half a mile north-north-eastward of the north-eastern extremity of Ouachil, is connected with it by a reef, which can be crossed by boats.

Between Ouachil, on the western side, and Dergamman Seghîr and Dergamman Kebîr, two islands about 3 miles east-south-eastward, on the eastern side, is a bay almost filled with reefs; Scoglio Nord Ovest and Scoglio Sud-Est, two rocks, above water, one of which is 90 feet (27^m4) high, lies on the coastal reef on the south-eastern side of Ouachil.

Debel Ali, an islet $1\frac{1}{4}$ miles southward of Ouachil, is separated from the latter island by a shallow bank; Umm es Seil is an islet lying near the south-western end of a reef extending $1\frac{3}{4}$ miles south-westward of Debel Ali, and Galdina is an islet about a quarter of a mile south-eastward of Umm es Seil. The bay south-westward of Umm es Seil and Galdina is encumbered with rocks and shoals.

Bakà, an island 2 miles south-eastward of Debel Ali, has a flat summit; a beacon is situated in the northern part of the island, about $1\frac{3}{4}$ miles from its northern extremity. From the northern extremity of this island a reef, on which lies an island, named Delesen, extends $5\frac{1}{4}$ miles north-eastward.

Between this reef, on the south-eastern side, and Dergamman

Chart 164.

Seghîr, Dergamman Kebîr, Debel All, and Galdina, on the north-western side, is a channel leading into the inner part of Baia di Ouachil.

Marsa Fatma, a village at the head of Baia di Ouachil, is uninhabited ; 5
a jetty extends from the shore here, and on the coast, close eastward of this jetty are two radio masts. A light railway runs inland from the village. There is a crane at the head of the jetty.

Abbogabay, an islet 3 miles east-north-eastward of Bakà, lies on the coastal reef, which extends 4 miles north-north-eastward of it ; Scoglio 10
Tauanich, a rock, above water, lies $2\frac{1}{2}$ miles northward of Abbogabay. A low sandy islet, of a whitish colour, lies $1\frac{1}{2}$ miles westward of Abbogabay, and has a beacon standing on its eastern side ; the coastal reef in this vicinity is visible at low water.

Umm es Sahrig, a coral island, lying at the edge of the coastal reef, 15
 $2\frac{1}{2}$ miles north-north-westward of Ras Andadda, is dotted with low bushes ; a shoal, with a depth of 5 fathoms (9^m1) over it, lies $1\frac{1}{2}$ miles eastward of this island.

A light is exhibited, at an elevation of 102 feet (31^m1), from an iron pyramidal framework tower, 69 feet (21^m0) in height, situated on the north-eastern side of Umm es Sahrig.

Chart 164, plan of Port Smyth.

Anchorage.—Directions.—Port Smyth affords anchorage in depths of from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms (5^m9 to 7^m8), sand and weed, good holding ground, about $1\frac{1}{2}$ cables north-eastward of the beacon on the north-western side of the entrance.

A vessel should enter this harbour with the beacons standing at its head in line, bearing about 056° , and, when the rocky patch one cable 30
north-eastward of the south-eastern entrance point bears 100° , course should be altered northward, passing eastward of the beacon (*Lat.* $15^\circ 32' N.$, *Long.* $40^\circ 00' E.$) marking the one-fathom (1^m8) patch on the north-western side of the entrance, and anchor as convenient.

A pier extends south-westward from the shore from a position 35
about one cable south-eastward of the front beacon at the head of the harbour.

Chart 164.

During southerly winds there is fair anchorage, for vessels with local knowledge, in depths of 13 fathoms (23^m8), mud, north-westward 40
of Dilemmi and about one mile offshore, or closer in, in depths of $6\frac{1}{2}$ fathoms (11^m9). These are not snug anchorages, for strong south-easterly breezes send a troublesome swell into the outer anchorage, and at the inner anchorage the reefs are very close. Landing is at times difficult. 45

Sheltered anchorage can be obtained, in a depth of 14 fathoms (25^m6), inside Umm Namūs according to the direction of the wind. The best berth is near the island, both for shelter and to avoid some $3\frac{1}{2}$ -fathom (6^m9) patches off the mainland.

Temporary anchorage can be obtained in a depth of about 10 fathoms 50
(18^m3), sand, about three-quarters of a mile north-westward of Dahleid, with the middle of that islet in line with the summit of Ouachil, bearing about 144° .

Anchorage can be obtained, in fine weather, in depths of from 10 to



Chart 164.

14 fathoms (18^m3 to 25^m6), anywhere on the bearing just mentioned between Dahleid and the point southward of Umm Namūs.

There is anchorage, for vessels with local knowledge, in a depth of 5 9 fathoms (16^m5), about 5½ cables off the north-western side of Adjuz, sheltered from south-easterly winds, and also, in a depth of 5 fathoms (9^m1), sand, with its south-western extremity, a sandy spit, bearing about 100°, and its western extremity 005°; the channel from northward, eastward of Banco Dahleid, is free of dangers.

10 During northerly winds the best anchorage in this neighbourhood for small vessels with local knowledge is, in depths of from 4 to 5 fathoms (7^m3 to 9^m1), off the southern side of Adjuz, in the channel between that island and Ouachil, taking care to avoid the shoals in mid-channel. A bank, on which are several shoal patches, extends 15 about one mile northward of the northern side of the latter island, and a vessel approaching from eastward must not bring the northern extremity of Laksu to bear less than 093° until northward of the 5-foot (1^m5) rocky patch in mid-channel.

There is anchorage in depths of from 7 to 8 fathoms (12^m8 to 14^m6), 20 sand and shells, in the northern entrance to the bay formed by Ouachil, on the west, and Dergamman Seghir and Dergamman Kebir, on the east, with the summit of Ouachil bearing 234° and the eastern extremity of Laksu bearing about 346° and well open eastward of the north-eastern extremity of Ouachil; this anchorage is not sheltered.

25 Good and well-sheltered anchorage in depths of 6 fathoms (11^m0), sand and mud, can be obtained, by vessels with local knowledge, in the channel north-westward of Delesen, about one mile north-north-westward of the western extremity of that island. Monte Achelo (Lat. 15° 00' N., Long. 40° 09' E.), bearing 238°, leads from seaward 30 into this channel.

Anchorage for small vessels with local knowledge may be obtained in depths of from 6 to 6½ fathoms (11^m0 to 11^m9) about three-quarters of a mile northward of the village of Marsa Fatma and about half a mile offshore. Vessels bound for this anchorage should steer in 35 through the channel between Dergamman Kebir and Delesen, with the southern extreme of Galdina bearing 235°; good landmarks for this reach are Monte Achelo and the beacons on Ouachil and Bakà.

When the western extreme of Debel Ali bears 325° course should be altered to 219° so as to pass about 4 cables south-eastward of Galdina; 40 a rock awash, about one mile south-south-westward of Galdina, which on this course is right ahead, is easily identified by its light colour in comparison to the deeper water around, but a spit, with a depth of 2½ fathoms (5^m0) over its outer edge, extending westward from the north-western side of Bakà to within about 3½ cables of the fairway, 45 cannot be seen. When the western extreme of Galdina bears 309° a vessel should steer 270° until the eastern extreme of Dufare, an islet 1½ miles west-north-westward of Debel Ali, bears 000°, when course should be altered southward, passing about 4½ cables eastward of the rock, above water, close southward of Hedan, an islet 4½ miles south- 50 south-westward of Galdina; the shoals on either hand of this latter reach can be easily seen.

When eastward of the above-water rock southward of Hedan a vessel should steer about 096° until Acbaro Seghir, an islet 1½ miles north-north-westward of Marsa Fatma village, bears 186°, when course

Charts 8d, 2523.

Chart 164.

should be altered for the anchorage, steering 177° . The dangers southward of Bakà are only visible at a distance of about $1\frac{1}{2}$ cables. Good landmarks in this vicinity are Monte Achelo, Monte Ghilifilli, and Monte Billoisin, $13\frac{1}{2}$ miles eastward of Monte Ghilifilli, also the beacon on Bakà. 5

There is good anchorage, during southerly winds, in depths of 8 fathoms (14^m6), sand and mud, $1\frac{1}{2}$ miles west-north-westward of the north-western point of Umm es Sahrig, also, during northerly winds, about 7 cables from its south-eastern coast, but a vessel approaching the latter anchorage must not bring the eastern extremity of this island to bear more than 010° so as to avoid the reef fringing its south-eastern side. 10

South-eastern part. — Islands and dangers. — Beacon. — Lights.—Ras Andadda is the north-western extremity of a small promontory on which rise two double-peaked hills, similar in shape to another hill situated on Ras Herbe, $3\frac{1}{2}$ miles south-eastward of Ras Andadda; this latter hill, which is double-peaked, is a good landmark, and from a distance has the appearance of an island, the land from which it rises being very low; other volcanic hills rise from the plain behind the hill just described but they are not so conspicuous. 20

Between Ras Herbe and Ras Gurnud, 4 miles east-south-eastward, is the entrance to a bay which is almost filled with the coastal reef.

Ras Gurnud (*Lat. $14^{\circ} 57' N.$, Long. $40^{\circ} 38' E.$*) is a coral point, having the appearance of an island even from close inshore, as it is only connected with the mainland by a low neck of sand. 25

Sha'ab Abu el Khosu, lying $12\frac{1}{2}$ miles north-north-eastward of Umm es Sahrig, is a steep-to coral reef which shows well; part of its northern edge dries when the sea-level is low.

Charts 164, 143.

Secca Muhammed, 12 miles south-eastward of Sha'ab Abu el Khosu, has a least depth of 2 fathoms (3^m7), coral, over it, and is visible from some distance; a shoal, with a depth of 7 fathoms (12^m8), lies $7\frac{1}{2}$ miles north-north-westward of the north-western end of this reef, and a 9-fathom (16^m5) patch $3\frac{1}{2}$ miles farther eastward. Three shoals, two having depths of $3\frac{1}{2}$ fathoms (6^m9) and one of $2\frac{1}{2}$ fathoms (5^m0), lie, respectively, $5\frac{1}{2}$ miles north-eastward, 7 miles east-north-eastward, and 10 miles east-north-eastward of Secca Muhammed. Banks, with least depths of 8 and 10 fathoms (14^m6 and 18^m3), lie 6 and 9 miles, respectively, south-south-eastward of Secca Muhammed; the latter bank lies 7 miles offshore. 30

Chart 143.

From Ras Gurnud the coast trends 10 miles south-eastward to Ras Midir, the south-eastern extremity of Midir, a coral island lying on the coastal reef; the coast is fringed by reefs extending to as much as $2\frac{1}{2}$ miles offshore. 45

Ras Maurech, $3\frac{1}{2}$ miles south-eastward of Ras Gurnud, is a coral peninsula presenting a broad face seaward and connected with the mainland by a low neck of sand; it is backed by a mangrove swamp.

A $5\frac{1}{2}$ -fathom (9^m6) patch lies 3 miles east-north-eastward of the eastern extremity of Ras Maurech. 50

Close westward of Midir a narrow boat channel leads through the reefs to a good boat harbour within; the north-western extremity of Midir in line with the south-eastern conical peak of Monte Faraon,

Charts 8d, 2523.

Chart 143.

4 miles south-westward, bearing about 215° , leads to the entrance to this channel.

Chart 733.

- 5 Crulli (Milkiat), an islet, 36 feet (11^m0) high, 8 cables east-south-eastward of Ras Midir, is connected with the cape by a coral reef ; a shallow bank extends $6\frac{1}{2}$ cables northward and north-eastward of this islet.

Charts 733, 143.

- 10 Between Ras Midir and Ras Anfila, $10\frac{1}{2}$ miles south-eastward, is the entrance to Baia di Anfila, which is encumbered with islands and shoals ; the villages of Arassan, Meder (Madir), and Anfila are situated on the shores of this bay ; a large plain, dotted with small hills, extends westward and south-westward of its head. Monte Faraon, three
15 isolated black cones, two of which are about 420 feet (128^m0) high and the third lower, stand about 3 miles westward of the northern part of the bay, and are very conspicuous in clear weather ; the northern cone is truncated. About 5 miles south-westward of the head of the bay is a range of hills, and 11 miles south-south-westward of Ras Anfila
20 (*Lat. $14^{\circ} 44' N.$, Long. $40^{\circ} 54' E.$*) is a ridge of hills of the same name as this cape. See view on chart 143.

Chart 733.

- Barm al Agi (Barm al Haji), two islets, lie in the entrance to Baia di Anfila ; Seil, the outer islet, 4 miles eastward of Ras Midir, is 19 feet
25 (5^m8) high, flat, coral, and bare ; Estam Aghe, $1\frac{1}{2}$ miles south-westward of the outer islet, is 33 feet (10^m1) high, with some bushes on it. These islets lie on a bank, which should not be approached too closely ; reefs extend northward, north-eastward, and westward of Estam Aghe ; a shoal, with a depth of $4\frac{3}{4}$ fathoms (8^m7), sand, over it, lies 2 miles
30 south-eastward of Seil.

- Achil, an islet, 49 feet (14^m9) high, $6\frac{1}{2}$ cables south-south-westward of Ras Midir, lies on the edge of the coastal reef, which here extends $1\frac{1}{2}$ miles offshore ; Alaulli, an islet, 2 miles southward of Achil, also lies at the edge of the coastal reef. Between Alaulli and Anto Kebir,
35 an islet $2\frac{1}{2}$ miles eastward, the area is shallow and encumbered with shoals.

- Anto Kebir and Anto Seghir, an islet one mile southward, are both fringed by coral reefs, which extend west-south-westward to the shore. A shoal, with depths of less than 5 fathoms (9^m1) over it, lies $8\frac{1}{2}$ cables
40 eastward of Anto Kebir ; on the northern part of this shoal is one 3-fathom (5^m5) patch and one $2\frac{1}{2}$ -fathom (4^m6) patch. The coral reef fringing Anto Seghir extends about 4 cables northward and north-eastward of it ; a shoal, with a depth of $2\frac{3}{4}$ fathoms (5^m0) over it, lies $8\frac{3}{4}$ cables north-eastward of Anto Seghir, and shoals, with least depths
45 of 4 and $3\frac{1}{2}$ fathoms (7^m3 and 5^m9), lie about $1\frac{1}{2}$ and 2 miles, respectively, east-north-eastward of the same islet.

- Mandola, an islet, lying on the coastal reef, 7 cables northward of the village of Anfila, has a village standing on its south-western side ; several shoals, with a least depth of $2\frac{1}{2}$ fathoms (4^m6), lie within one
50 mile northward and eastward of this islet.

Daramsas, an islet, lying one mile northward of Ras Anfila, is covered with bushes ; a tripod beacon, surmounted by a white triangle, stands on the western part of this islet. A reef extends 5 cables west-south-westward of the western end of the islet, and at its outer end lies a rock

Charts 143, 8d, 2523.

Chart 733.

awash ; a shoal, with a least depth of 2 fathoms (3^m7) over it, lies one mile west-north-westward of the western end of Daramsas.

Ras Anfila is coral, and is fringed by a reef ; on south-south-westerly bearings it has the appearance of an island. *See view on chart 143.* 5

Chart 143.

From Ras Anfila the coast trends 13½ miles east-south-eastward to Punta Sha'ab Shakhs, and is low and sandy ; there are several shallow bays on this stretch of the coast but they are not visible from seaward, whence the coast shows as an unbroken line. Several shoals lie within 10 2½ miles of the coast.

Three Fathom banks, lying 18 miles north-north-eastward of Ras Anfila, extend about 7½ miles in an east-south-easterly direction, and have a least depth of 3 fathoms (5^m5) over them ; shoals, with depths of 3 and 4 fathoms (5^m5 and 7^m3), lie 4 miles northward and 4½ miles 15 north-eastward, respectively, of these banks.

Seven Fathom banks, lying 12½ miles north-north-eastward of Punta Sha'ab Shakhs (*Lat. 14° 39' N., Long. 41° 07' E.*), with a least depth of 6½ fathoms (11^m9) over them, extend about 12 miles in a south-easterly direction. 20

A 10-fathom (18^m3) bank lies 6 miles north-eastward of Ras Anfila, and a small coral bank, with a least depth of 6 fathoms (11^m0) over it, lies 7½ miles north-north-eastward of Punta Sha'ab Shakhs.

Ras Anrata, on which is the settlement of Thiò with several conspicuous buildings, 4 miles east-south-eastward of Ras Anfila, is a low 25 coral point which, from close inshore, has the appearance of an island ; it is reported that lights on the coast in this vicinity may be visible from seaward for a distance of 8 miles.

A pier extends west-north-westward from the coast close south-westward of Ras Anrata ; light craft can go alongside the pier but 30 only at high water.

A light is exhibited from the head of this pier.

Sha'ab Shakhs, a shallow spit, extends 3½ miles north-north-eastward of Punta Sha'ab Shakhs, and a rock, with a depth of less than 6 feet (1^m8) over it, lies on its western side ; this spit does not show well.

A light is exhibited, at an elevation of 125 feet (38^m1), from a white metal tower on a white tripod, with a black band, 121 feet (36^m9) in height, situated on Punta Sha'ab Shakhs. The light-keeper's dwelling is built into the tripod at a height of 33 feet (10^m1). *See sketch.*

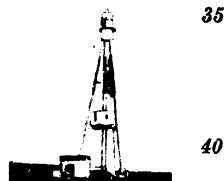
Anchorage.—Anchorage can be obtained from 1½ to 3 miles offshore between Ras Gurnud and Ras Midir, during fine weather, in depths of from 8 to 14 fathoms 45 (14^m6 to 25^m6).

Chart 733.

During southerly winds there is good anchorage in depths of 7 fathoms (12^m8), sand and mud, about one mile westward of Seil, and a similar distance northward of Estam Aghe. 50

There is anchorage, in a depth of 9 fathoms (16^m5), mud, 4½ cables southward of the south-western extremity of Estam Aghe.

Near the head of Baia di Anfila and westward of Anto Seghir is an area with depths of from 1½ to 3½ fathoms (2^m3 to 6^m4), in which



Punta Sha'ab Shakhs lighthouse.

Charts 143, 8d, 2523.

Chart 733.

small vessels with local knowledge might obtain anchorage, but it is encumbered with shoals.

- There is anchorage in depths of 6 fathoms (11^m0), mud and sand, 5 6½ cables east-south-eastward of the south-eastern point of Anto Seghir, but the bottom in the vicinity is very irregular, with many shoals, with a least depth of 2½ fathoms (4^m1) over them.

- Southward of this anchorage a shallow passage leads through a break in the coastal reef into a shallow bight on the mainland, affording 10 a boat harbour; Alet, an islet, on which there is a village, lies in mid-channel about 1½ miles southward of Anto Seghir and about one mile north-eastward of the entrance to this bight.

- Good anchorage can be obtained north-westward of Daramsas in depths of from 6½ to 8 fathoms (11^m9 to 14^m6), sand, with the western 15 extremity of this islet bearing 172°, distant 8 cables. When approaching this anchorage from eastward the islet must not be closed within 6 cables as there are depths of less than 5 fathoms (9^m1) 3½ cables northward of its north-eastern point.

- Anchorage can be found in depths of from 3 to 5 fathoms (5^m5 to 20 9^m1) about 5 cables from the head of a small bay on the western side of Ras Anfila (*Long. 14° 44' N., Long. 40° 54' E.*).

Charts 164, 143.

- Directions** (continued from page 253).—A vessel proceeding through Canale Sud di Massaua should, from a position about 4 miles 25 eastward of Ras Harb, steer to pass about 2 miles north-eastward of Secca Magiunia and Madote and thence through the channel between the Assarca islets and Sciumma. After passing through this latter channel course should be shaped to pass about 2 miles north-eastward of Fawn shoal, 6 miles south-westward of Sha'ab Abu el 30 Khosu, and 5 miles south-westward of Secca Muhammed and 7½ miles north-eastward of Ras Gurnud; Monte Faraon is a good landmark. From this latter position a vessel should steer to pass about 6 miles north-eastward of Punta Sha'ab Shakhs, taking care to avoid the 6-fathom (11^m0) bank 7½ miles north-north-eastward of this point.

35 *Chart 143.***PUNTA SHA'AB SHAKHS TO RAS GUMUDLI.—Aspect.**

From Punta Sha'ab Shakhs the coast trends 4½ miles east-south-eastward to Ras Shakhs, and thence 51½ miles south-eastward to Ras Gumudli.

- 40 Ranges of high volcanic mountains, lying inland, slope to the coast in this neighbourhood.

- About 6 miles southward of Ras Shakhs is Monte Ghedele, the eastern extremity of a hilly range, with conspicuous jagged peaks, which trends about 10 miles westward and may often be seen when the higher 45 and more distant mountains are obscured by haze; Monte Anrata, at the western end of this range, is a round summit on the eastern side of a flat ridge which falls steeply. A range of mountains extends 13 miles southward of Monte Anrata, and terminates in a rounded summit, 4,100 feet (1,249^m7) high (*see view on chart*); Monte Cosar, at the south- 50 eastern end of this range, is isolated and shows well from northward.

Between Ras Shakhs and Ras Sirbut, about 28 miles south-eastward, a range of hills, a short distance inland, trends parallel with the coast.

Off-lying islets and dangers.—Curdumiât, a

Charts 143, 8d, 8e, 2523.

Chart 143.

rugged bluff volcanic island, lies $10\frac{1}{2}$ miles north-north-westward of Ras Gumudli and $3\frac{1}{2}$ miles offshore ; a reef, with a least depth of $2\frac{1}{2}$ fathoms (4^m6), extends $1\frac{1}{2}$ miles westward of it, and there is a rock, above water, $1\frac{1}{2}$ cables northward of this islet, and a similar rock close southward of Curdumiât. 5

A group of smaller islets and rocks of the same name lies on a shallow bank, 2 miles south-south-westward of Curdumiât ; the channel between these islets and the latter island, also the channel between these islets and the coast, should only be used by small vessels with local knowledge. 10

Anchorage can be obtained about one mile south-westward of the island of Curdumiât in depths of from 13 to 16 fathoms (23^m8 to 29^m3) ; this anchorage is not sheltered from wind and should only be used in calm weather. 15

Coast.—Dangers.—Ras Shakhs (*Lat. $14^{\circ} 38' N.$, Long. $41^{\circ} 11' E.$*), which is low and sandy, is inconspicuous, as a flat plain extends from it to the base of the mountains about 7 miles inland ; there are depths of 5 fathoms (9^m1) $2\frac{1}{2}$ miles northward of this point and also within one mile eastward of it, but the bottom is uneven. Caution is necessary when approaching this point. 20

Two shoals, each with a depth of $2\frac{3}{4}$ fathoms (5^m0) over it, lie about 2 miles, respectively, east-south-eastward and south-eastward of Ras Shakhs ; the southern shoal is about one mile offshore.

A shoal, with a depth of $4\frac{1}{2}$ fathoms (8^m2) over it, lies $7\frac{1}{2}$ miles south-eastward of Ras Shakhs and $1\frac{1}{2}$ miles offshore. 25

Ras Cosâr, 12 miles south-eastward of Ras Shakhs, is a small projection on the northern side of the mouth of a stream ; Monte Cosâr is situated $8\frac{1}{2}$ miles south-westward of this point, and there is a lower peak 2 miles east-north-eastward of that mountain. 30

A rocky spit, with depths of less than 6 feet (1^m8) over it, extends $3\frac{1}{2}$ cables from the shore, half a mile north-westward of Ras Cosâr ; a 10-fathom (18^m3) bank lies about 3 miles east-south-eastward of Ras Cosâr.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies about one mile offshore, $5\frac{1}{2}$ miles west-north-westward of Curdumiât. 35

Charts 14, plan of Eid road ; 143.

The village of Edd (Eid), 2 miles westward of Ras Gumudli, stands on a sandy plain at the head of Baia di Edd, a shallow bight in the coast ; at the western end of this village are a few white stone buildings and at its north-eastern end is a small mosque with a minaret. 40

Chart 143.

Monte Muselali, 6 miles southward of Ras Gumudli, has a broad saddle-shaped summit, which is often obscured, but is a good landmark if visible ; on its western side is a conspicuous crater and its eastern side falls steeply. 45

Chart 14, plan of Eid road.

Anchorage.—Baia di Edd has bad holding ground and the approach to the shore is encumbered with shoals and banks and, as there is very little shelter from south-easterly winds, the anchorage is not recommended. 50

Chart 143.

RAS GUMUDLI TO RAS DARMA.—Aspect.—From Ras

Charts 143, 8d, 8e, 2523.

Chart 143.

Gumudli the coast trends about 15 miles east-south-eastward to Ras Corasciora, thence 6 miles south-eastward to Ras Sceraier, and thence 4½ miles farther south-eastward to Ras Buganni; this stretch of coast is mostly rocky and has some slight indentations. Between Ras Buganni and Rachmat, an island 7½ miles east-south-eastward, is Baia di Barassoli, and from Penisola di Cabija, a low peninsula southward of Rachmat, the coast, which is fringed by a coral reef, trends about 30 miles south-south-eastward to the head of Baia di Beilul, of which Ras Darma is the eastern entrance point.

Within the coast, just mentioned, are ranges of high volcanic mountains sloping to the sea.

Monte Endel (*Lat.* 13° 50' N., *Long.* 41° 55' E.), on which stands a pillar, is situated 3½ miles west-south-westward of Ras Corasciora and 1½ miles inland, and is conical in shape. Close north-eastward of it are two other lower conical hills; these three hills, on a west-south-westerly bearing, are in line and appear as one. Monte Sachsohe, on which stands a pillar, lies 3 miles south-eastward of Monte Endel, and is also conical in shape, and 3 miles farther south-eastward is another conical hill.

Picco Aguzzo, 15½ miles south-south-westward of Monte Sachsohe, is the summit of a conical mountain, and about 5 miles south-south-westward stands another mountain, 5,083 feet (1,549^m3) high, with a sharp peak on its south-western end; 7½ miles farther south-south-westward and 27 miles inland is a smooth topped mountain attaining an elevation of 6,990 feet (2,130^m5).

From the hills, from 617 to 880 feet (188^m1 to 268^m2) high, lying between the coast and the three mountains just described, land, about 1,000 feet (304^m8) high, intersected by valleys and appearing level from seaward, extends south-eastward from 5 to 12 miles inland.

Off-lying islands and dangers.—Light.—Anchorage.—Scoglio Barn, lying 8½ miles east-north-eastward of Ras Gumudli and 4½ miles offshore, is fringed by a bank which is steep-to and extends 2 cables from it; a rocky shoal, with a depth of 4 fathoms (7^m3) over it, lies about 1½ miles north-north-eastward of Scoglio Barn.

Cod-Ali Est, a rock, above water, 2½ miles southward of Scoglio Barn and the same distance offshore, is steep-to.

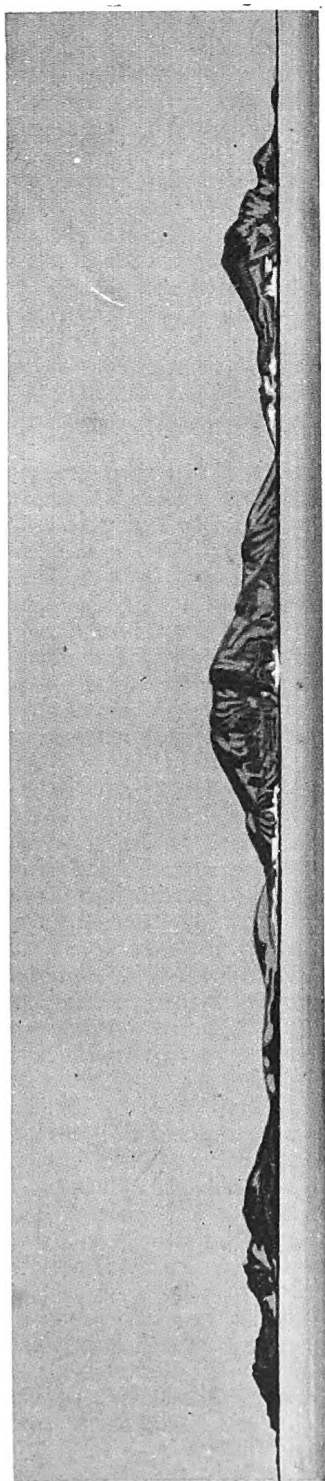
Abail Grande, a volcanic island 6½ miles east-south-eastward of Cod-Ali Est, has three hummocks on it, of which the south-westernmost is the highest; the island is fringed by a rocky reef and shoal water, with depths of less than 5 fathoms (9^m1), extends one mile south-westward of its south-western end and to as much as half a mile from its north-western side. *See* views facing this page.

A light is exhibited, at an elevation of 190 feet (57^m9), from a grey iron framework structure, of which the lower part is covered in, 33 feet (10^m1) in height, situated at the north-eastern end of Abail Grande.

Anchorage, with moderate shelter from northerly winds, may be obtained south-eastward of Abail Grande; vessels must anchor in depths of not less than 16 fathoms (29^m3), as the depths decrease quickly towards the island. The holding ground is moderately good.

Seil Abail, a rock above water, 3 miles south-eastward of Abail Grande, is fringed by a bank, with depths of less than 10 fathoms (18^m3), which extends three-quarters of a mile north-westward of it.

Charts 8e, 2523.



Lighthouse.

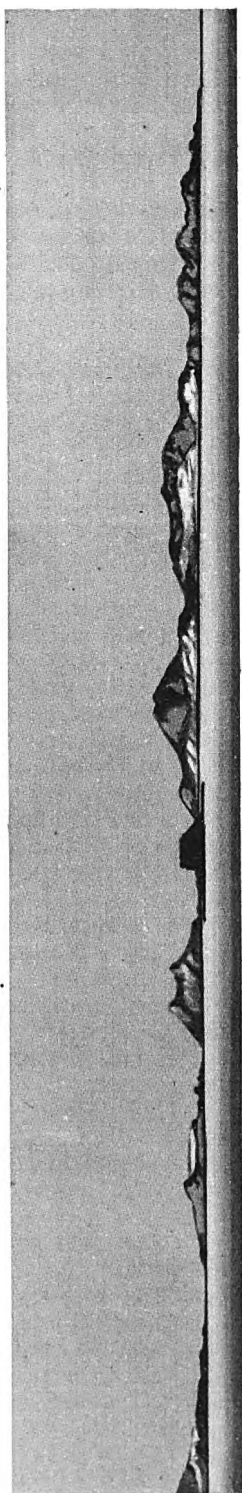
Abail Grande from northward.

Marsa Dudo.

Abail Piccola.

Abail Grande.

Lighthouse.



*Sail Abail, bearing about
284°, distant 2 miles.*

Abail Grande from south-eastward.

(Originals dated 1889.)

Chart 923, plan of Rakhmat island anchorage.

There are three white rocky islets lying from about 4 to 5 miles east-north-eastward of Ras Buganni, viz., Fanaadir di Nord-Est (North-East Quoin), Fanaadir di Nord-Ovest (North-West Quoin), and Fanaadir Sud (South Quoin); Fanaadir Sud is 90 feet (27^m4) high. 5
A shoal, with a depth of 34 feet (10^m4) over it, lies 2½ miles east-south-eastward of Fanaadir Sud.

Scoglio Fanaadir (Quoin rock), lying 1½ miles west-south-westward of Fanaadir Sud (*Lat.* 13° 44' N., *Long.* 42° 09' E.), dries one foot (0^m3), and is generally visible; there are depths of from 4 to 5 fathoms (7^m3 10 to 9^m1) close to this rock, and a shoal, with a depth of 5 fathoms (9^m1) over it, lies 1½ miles south-westward.

Chart 143.

Coast.—Islets and dangers.—Beacon.—On the eastern side of Ras Gumudli is a small bight, which is separated from Baia di Edd by 15 a promontory of black rocky lava from 33 to 50 feet (10^m1 to 15^m2) high.

A rocky sandy spit, with depths of less than 3 fathoms (5^m5) over it, extends 1½ miles north-eastward of Ras Alob, a promontory about 4½ miles eastward of Ras Gumudli, and on the north-eastern edge of 20 this spit lies an islet, known as Cod-Ali; a rock, with a depth of less than 6 feet (1^m8), lies 1½ cables southward of this islet.

Secca Scilla, a spit, with a depth of 3½ fathoms (6^m9) over its outer end, extends about 2 miles northward from a position on the coast 25 5½ miles south-eastward of Ras Alob.

Monte Dudo, on which stands a pillar, is the summit of a promontory, 6½ miles east-south-eastward of Ras Alob, and on the western side of this promontory is Marsa Dudo.

Abail Piccola, a volcanic island, 4½ miles east-south-eastward of Cod-Ali Est and three-quarters of a mile offshore, lies on the coastal 30 bank; near its north-eastern end is a saddle-shaped hill, and a pillar stands on a hill at the southern end of this island. The channel between Abail Piccola and the coast should be used only by boats. See view facing page 272.

A spit, with a depth of 3½ fathoms (6^m4) over its outer end, extends 35 about 1½ miles north-north-eastward from a position on the coast about 1½ miles west-north-westward of Ras Sceraier.

Ras Sceraier is the northern extremity of a promontory of lava; on this promontory stands Monte Ascoma, 359 feet (109^m4) high. On the coast at Ras Sceraier is a conspicuous brown volcanic hill, with a 40 flat summit, about 200 feet (61^m0) high; near its southern side is a sandhill.

Between Ras Sceraier and Ras Buganni the coast forms a slight bight and is sandy; the coastal bank, with depths of less than 5 fathoms (9^m1), extends to a distance of about one mile offshore. 45

Chart 923, plan of Rakhmat island anchorage.

For about 3 miles south-eastward of Ras Buganni the coast, which here forms the south-western shore of Baia di Barassoli, first consists of blackish lava followed by a low sandy stretch, covered with dunes and bushes; the southern shore of this bay rises gradually inland to 50 the high land described on page 272. From the head of the bay the coast trends 2 miles east-north-eastward to a point on which is situated the village of Barassoli; this point consists of lava, westward of which is a white sandhill.

Charts 143, 8e, 2523.

Chart 923, plan of Rakhmat island anchorage.

On the eastern side of the point, on which stands Barassoli village, a shallow lagoon extends about 8 miles south-eastward.

Baia di Barassoli is encumbered with islets and rocks.

- 5 Caranassi (Williamson islet), an islet, lying on the coastal bank $2\frac{1}{2}$ miles south-eastward of Ras Buganni (*Lat. 13° 43' N., Long. 42° 05' E.*) and one mile offshore, is connected with the coast $2\frac{1}{2}$ miles south-eastward, by a bank, with depths of less than 3 fathoms (5^m5) over it; Seil Sèlafi (Bird islet), $1\frac{1}{2}$ miles eastward of Caranassi, is an
10 above-water rock lying at the northern end of a shoal, with a least depth of 8 feet (2^m4) over it and which extends $3\frac{1}{2}$ cables southward of the rock; Sèlafi (East islet), an islet $1\frac{1}{2}$ miles south-south-eastward of Seil Sèlafi and 2 cables offshore, lies on the coastal bank, which, with depths of less than 3 fathoms (5^m5) over it, extends 5 cables
15 northward and $1\frac{1}{2}$ miles east-north-eastward of it.

- Penisola di Cabija is bordered by a coral reef which dries, and on which lie several islets, viz., Dannabah, Auagudur, Rachmat (Rakhmat), Abullen Est, and Abullen Ovest; Dannabah, lying at the north-western end of this coral reef, is partially covered with mangroves;
20 Auagudur, $1\frac{1}{2}$ miles south-eastward of Dannabah, is low and sandy, and is completely covered with mangroves; Rachmat, lying at the north-eastern edge of this coral reef, has a pillar standing on its summit, and there is an isolated hillock at the south-eastern end of this islet; Abullen Est and Abullen Ovest lie at the edge of the coral reef north-
25 ward of Dannabah; Seil Abullen is an above-water rock 3 cables north-north-westward of Abullen Ovest.

From a distance these islets and the other islets in Baia di Barassoli appear to be a continuation of a range of hills extending from the high land of the interior to just southward of Barassoli.

30 *Chart 143.*

- Southward of Penisola di Cabija the coast is backed by low, bare, sandy desert, which extends a considerable distance inland; the only elevation anywhere near the coast, visible from a passing vessel, is Behèta Ali, a blackish volcanic hill on which stands a pillar, which is
35 situated $12\frac{1}{2}$ miles south-south-eastward of the north-western extremity of Penisola di Cabija and 3 miles inland.

A beacon, 26 feet (7^m9) in height, with the upper part painted white, stands on the coast about 20 miles south-south-eastward of the north-western extremity of Penisola di Cabija.

- 40 **Anchorages.**—Marsa Dudo affords good anchorage to vessels with local knowledge in depths of from $6\frac{1}{2}$ to 8 fathoms (11^m9 to 14^m6), mud and sand, good holding ground, with Monte Endel bearing about 160° and the northern extremity of Abail Piccola about 080° .

- 45 During north-westerly winds somewhat sheltered anchorage may be obtained in depths of from 8 to 11 fathoms (14^m6 to 20^m1), good holding ground, southward of Abail Piccola. This anchorage should be approached from eastward with Monte Dudo bearing 270° , passing between Ras Corasciora and Abail Grande.

50 *Chart 923, plan of Rakhmat island anchorage.*

Baia di Barassoli affords good anchorage, during south-easterly winds, to medium-sized vessels.

Good anchorage can be obtained by small vessels in depths of from $3\frac{1}{2}$ to $4\frac{3}{4}$ fathoms (6^m4 to 8^m7) westward of Rachmat, anywhere north-

Chart 923, plan of Rakhmat island anchorage.

ward of an imaginary line joining the northern extremity of that islet and Seil Sèlafi (*Lat.* 13° 41' N., *Long.* 42° 08' E.).

There is anchorage in depths of about 3½ fathoms (6^m4) south-eastward and westward of Seil Sèlafi.

5

Charts 923, plan of Beilul bay; 143.

Baia di Beilul.—Baia di Beilul is entered between Ras Darma (Beilul) and the coast westward; the village of Beilul is situated 2½ miles inland, 13 miles westward of Ras Darma, and on the coast south-south-eastward of this village is a group of huts which is conspicuous from seaward. Small quantities of fresh provisions can be obtained at Alali, a village 4½ miles south-south-westward of Ras Darma.

10

Chart 923, plan of Beilul bay.

About one mile west-south-westward of Ras Darma is Monte Darma, 15 which slopes south-westward and fronts the eastern side of the bay; a pillar stands on the summit of Monte Darma. About 3½ miles south-westward of this summit is a conspicuous large white sandy patch on the side of the hills on the southern side of the bay, and about 1½ miles west-south-westward of this patch and 1¼ miles inland the hills rise 20 to Monte Hassalili, on the summit of which is a pillar; westward of these hills are lower, bare, black, lava hills, while within the western side of the bay is a flat clayey plain.

Baia di Beilul is easily identified from northward by the white sandy patch just described, which is a good landmark by either day 25 or night; the middle of this patch, bearing 180°, leads into the bay.

Islets and dangers.—Sayal islet, 6 miles northward of Ras Darma, is described on page 131.

A large reef, with a least depth of 5 feet (1^m5) over it, lies in the middle of the bay, with its northern extremity 6½ miles westward of 30 Ras Darma; two detached shoals, with least depths of 2½ and 3 fathoms (4^m6 and 5^m5), lie about one cable north-eastward of the north-eastern side of this reef, and two other detached shoals, with least depths of 19 and 33 feet (5^m8 and 10^m1), lie 3 and 9 cables, respectively, north-eastward of the shoal, with a depth of 3 fathoms (5^m5).

35

A shoal, with a depth of 29 feet (8^m8) over it, lies 9 miles west-north-westward of Ras Darma and 1½ miles offshore, and a shoal, with a depth of 3 fathoms (5^m5), about 1½ miles south-south-westward of the 29-foot (8^m8) shoal.

Isolotto Bianco (White islet) lies on a shallow spit, about half a mile 40 offshore and 2½ miles south-westward of the summit of Monte Darma; a shoal, with a least depth of 3 fathoms (5^m5) over it, lies 1½ miles westward of this islet.

Anchorage.—Baia di Beilul affords good anchorage, sheltered from the strong south-easterly winds which prevail in winter, but it is open 45 to northerly winds. The best berth is in the eastern part of the bay, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), with Isolotto Bianco, bearing 216°, distant 1¼ miles, and about 6 cables offshore. Dhows anchor in the western part of the bay.

Southerly winds impede and sometimes prevent boat work. 50

For the description of the coast south-eastward of Ras Darma (*Lat.* 13° 14' N., *Long.* 42° 33' E.) see page 132.

Charts 143, 8e, 2523.

CHAPTER VII

THE COAST OF SINAI PENINSULA FROM RAS MUHAMMAD TO RAS NAZRĀNI,
THE GULF OF 'AQABA, AND THE EASTERN SIDE OF THE RED SEA FROM
RAS AL FASMA TO JIDDA

Charts 8a, 8b, 8c.

GENERAL REMARKS.—The western side of the Gulf of 'Aqaba is Egyptian territory, and the eastern side of that gulf and of the Red sea is Arabian territory. The part of the latter described in this chapter embraces almost the whole littoral of Hejaz, which includes the sacred cities of Mecca and Medina, the birthplace and burial place, respectively, of Muhammad.

The coast between Ras al Fasma, the eastern entrance point of the Gulf of 'Aqaba, and Yenbo', about 300 miles south-eastward, is from 50 to 100 feet (15^m2 to 30^m5) high and mostly has no beach; southward of Yenbo' it is lower and more sandy. There are only slight indentations on the whole of this coast.

The reefs fronting the coast between Ras al Fasma and Jidda, about 470 miles south-south-eastward, either extend in ridges and are almost steep-to, or lie on extensive banks; these reefs vary from three-quarters of a cable to 3 miles in length, rarely exceeding the latter. There is no heavy surf over most of them under any conditions of weather.

Charts 8b, 8c.

The coast, between Yenbo' and Jidda, consists of sandbanks with coral bases, with off-lying reefs almost parallel and in many places connected with it.

Charts 8a, 8b, 8c.

The inlets on this coast, the entrances to which are very difficult to distinguish, afford convenient stopping places for small vessels with local knowledge proceeding up and down the Red sea; in places there are none, and here small craft are obliged to depend on the precarious shelter afforded by the reefs.

Charts 8a, 8b, 2523.

Aspect.—The mountains of Arabia which back the coast from the head of the Gulf of 'Aqaba (*Lat.* 29° 00' N., *Long.* 34° 44' E.) to the Straits of Bāb-al-Mandab, a distance of about 1,150 miles, are conspicuous throughout, presenting peaked summits of bare rock from 5,000 to 8,000 feet (1,524^m0 to 2,438^m4) high, at distances of from about 12 to 60 miles inland. This range falls so abruptly on its western

Chart 2523.

Charts 8a, 8b, 2523.

side that it presents a series of inaccessible cliffs seawards ; other, but lower, ranges approach the coast in places, decreasing in elevation as they approach, those fronting the sea being of light-coloured sandstone. In clear weather these mountains are visible from distances 5 of from about 40 to 70 miles, the most noticeable being Jabal Muwailih (Mount Mowila), situated 65 miles east-south-eastward of Ras al Fasma ; Jabal Radhwe (Jebel Rudhwa), about 230 miles south-eastward of Jabal Muwailih, and Jabal Subh, 88 miles south-south-eastward of Jabal Radhwe. 10

Chart 2523.

Jabal Ghazuan (Jebel Gazan), about 155 miles south-eastward of Jabal Subh, is about 14,000 feet (4,267^m2) high, and is reported to be the highest mountain in Arabia.

Charts 8a, 8b, 8c. 15

From the bases of these hills to the coast from the head of the Gulf of 'Aqaba to Jidda, there is a low district of irregular width, which the Arabs call At Tihāma. It is generally desert and barren ; some few spots are cultivated, but their total area is small.

Local weather.—*See pages 37-41.* 20

Chart 8a.

GULF OF 'AQABA.—The Gulf of 'Aqaba, extending 98 miles in a north-north-easterly direction on the north-eastern side of the south-eastern entrance to the Gulf of Suez, is the southerly continuation of Wādi al 'Araba, the valley through which flows the River Jordan 25 and the Dead sea ; the latter is about 1,140 feet (347^m5) below the level of the Mediterranean. The shores of the gulf are mostly steep-to.

Aspect.—Mountainous ridges, mostly granite, extend south-south-westward, from the Dead sea, and closely approach the shores of the 30 Gulf of 'Aqaba ; in many places they rise from the plain like a wall, and the passes over them are extremely difficult.

Charts 3595, plan of Strait of Tiran ; 8a.

A flat plain of sand and coral rises gradually to the foot of the mountains on the Sinai peninsula (*Lat. 28° 00' N., Long. 34° 26' E.*) 35 on the western side of the entrance to the gulf.

Islands and dangers in entrance.—**Beacon.**—Tirān island, lying in the centre of the entrance to the gulf, forms the eastern side of the Strait of Tirān. Its summit, a peak, 1,670 feet (509^m0) high, is situated near the centre of the southern part of the island, the 40 remainder of the island consisting of a low sandy plain with hills in



Tirān island, bearing 048°, distant about 25 miles.

(*Original dated 1857-59.*)

places ; on the western side of the island are two conspicuous hills, 153 and 310 feet (46^m6 and 94^m4) high, 1½ and 2 miles, respectively, south-south-eastward of Johnson point, its north-western extremity ; the northern part is a peninsula, connected with the main part of the 45

Chart 2523.

Charts 3595, plan of Strait of Tiran ; 8a.

Island by an isthmus, on the eastern side of which is Foul bay (*Lat.* 27° 59' N., *Long.* 34° 30' E.). In August, 1937, the island was reported to be uninhabited.

- 5 The south-western extremity of Tīrān island is steep and cliffy and is fringed by a coral reef. Johnson point, consisting of sand and dead coral, is low and flat ; a small white stone cairn, which is not conspicuous, stands about 1½ cables southward of this point. Two small sandy beaches, conspicuous from south-westward, lie close
10 southward of Johnson point, and generally afford good landing ; elsewhere in this locality there are low, undercut, coral cliffs.

A reef borders the northern part of Tīrān island, extending to as much as one mile north-westward, 2½ miles northward, 1½ miles north-eastward, and 3 miles eastward of it ; the south-eastern side of the
15 island is fringed by a reef, but its southern side is steep-to.

Chart 8a, plan of Tiran island anchorage.

- Between Champlain point, the south-eastern extremity of the island, and Arab point, 1¼ miles north-westward, and thence to Eagle rocks, a mile farther north-westward, the coast is a sloping sandy beach.
20 Eagle rocks, lying 1½ cables offshore, Plate islet, 4 cables northward of them, and Requin islet, 4 cables farther northward, are low, well-defined coral rocks.

A coral reef, with a least depth of one foot (0^m3) over it, lies 5½ cables eastward of Champlain point, and several detached shoals, with depths
25 of from 1½ to 4½ fathoms (2^m7 to 8^m7), lie within 2 miles of the south-eastern side of Tīrān island.

Chart 3595, plan of Strait of Tiran.

- Lying in the fairway of the Strait of Tīrān are Gordon reef, Thomas reef, Woodhouse reef, and Jackson reef, named in order from south-
30 ward ; these reefs are awash at summer level of low water, and there are several large boulders on them which dry. Gordon reef is marked at its south-western extremity by a beacon, consisting of an iron tripod, 26 feet (7^m9) in height, painted black, and surmounted by a triangle ; a conspicuous wreck was reported, in 1936, to lie on the north-western
35 edge of this reef.

Chart 8a, with plan of Tiran island anchorage.

- Sanāfir island, lying 1½ miles eastward of Tīrān island, was reported in August, 1937, to be uninhabited ; numerous limestone hills, with jagged peaks, rise from the eastern part of this island, the highest
40 being near its south-eastern extremity ; a hill, 138 feet (42^m0) high, is situated 6 cables eastward of Sanāfir point, its south-western extremity. The western part of this island forms a peninsula, on the eastern side of which is a bight ; the southern and south-western sides of the island are bordered by a reef, which extends as far northward as the entrance
45 to the bight just mentioned, leaving a narrow channel between the reef and the western entrance point.

Patches of coral reef fringe the western side of Sanāfir island (*Lat.* 27° 58' N., *Long.* 34° 40' E.), and a rock, with a depth of less than 6 feet (1^m8) over it, lies 3½ miles eastward of its eastern extremity ; a shoal,
50 with a depth of 3 fathoms (5^m5), lies 2¼ miles north-north-eastward of this rock, and close northward of the shoal is a reef, with depths of less than 6 feet (1^m8).

Chart 8a.

Tidal streams.—The direction of the tidal streams in the southern

Charts 8a, 2523.

Chart 8a.

approach to the Gulf of 'Aqaba is uncertain and the streams sometimes attain a considerable rate.

Charts 3595, plan of Strait of Tiran; 8a.

In March, 1935, H.M.S. *Penzance* experienced a northerly set of about $3\frac{1}{2}$ knots in Enterprise passage, the channel westward of Gordon reef, about an hour after high water at Tīrān island; a southerly wind, force 4 to 6, was blowing at the time.

In June, 1938, during a north-north-easterly wind, force 5, H.M.S. *Fleetwood* experienced a southerly set of one knot in this channel, about $2\frac{1}{2}$ hours after high water at Tīrān island.

In December, 1936, H.M.S. *Londonderry* reported that the tidal streams in the passage between Tīrān and Sanāfir islands set northward during the rising tide and southward during the falling tide.

Chart 8a, with plan of Tiran island anchorage.

Winds.—In August, 1937, H.M.S. *Londonderry*, whilst at anchor off Champlain point, Tīrān island, experienced a northerly gale which sprang up suddenly during the night. These gales are stated to occur frequently during the night in this locality.

Charts 3595, plan of Strait of Tiran; 8a, with plan of Tiran island anchorage.

Anchorage at Tīrān and Sanāfir islands.—The best anchorages are southward of Johnson point, and in the bay westward of Champlain point, on the southern side of Tīrān island. The latter is the better and more sheltered.

Chart 3595, plan of Strait of Tiran.

Johnson point anchorage, available only for small vessels with local knowledge, is an opening in the reef, and is well sheltered from northward and westward. Its approach from southward is encumbered with coral patches, but with the sun astern they are mostly visible; these patches shelter the anchorage from southward to some extent. A low summit in line with the white cairn near Johnson point, bearing 020° (see view on chart), leads into this anchorage clear of dangers, but the passage between the reefs is only $1\frac{1}{2}$ cables wide. A good berth is in a depth of $6\frac{1}{2}$ fathoms (11^m9), sand and coral clay, with the white cairn bearing 026° , distant 3 cables; there is 800 feet (243^m8) swinging room with a least depth of 5 fathoms (9^m1).

Chart 8a, with plan of Tiran island anchorage.

Good shelter from northward may be obtained by small vessels in a bight on the southern side of Tīrān island, westward of Champlain point; the coastal reef extends some distance offshore from the eastern and western entrance points, but the shore at the head of the bight is steep-to and sandy. A conspicuous hump, one mile west-south-westward of Champlain point (Lat. $27^\circ 56' N.$, Long. $34^\circ 36' E.$), bearing 342° , leads in from seaward and, when the western entrance point of the bight is in line with the southern extremity of the island, bearing 268° , vessels should anchor in a depth of 12 fathoms (21^m9), sand and coral, good holding ground, about 3 cables offshore. It was reported, in 1926, that there were depths of not less than 5 fathoms (9^m1) within about $1\frac{1}{2}$ cables of the shore.

Anchorage may be obtained off the eastern side of Tīrān island in depths of from 7 to 8 fathoms (12^m8 to 14^m6), about 7 cables offshore, with Eagle rocks bearing 265° and Arab point, its black rocks showing well against the yellow background, bearing 169° ; the bottom is

Charts 8a, 2523.

Chart 8a, with plan of Tiran island anchorage.

everywhere rocky and foul and the holding ground bad. This anchorage is sheltered from southward but affords little protection from northward; it should be approached from southward, passing between

5 Champlain point and the coral reef $5\frac{1}{2}$ cables eastward.

The bight on the eastern side of the peninsula forming the western part of Sanāfir island affords anchorage to small vessels with local knowledge in depths of 7 fathoms (12^m8), sand, but it is exposed to southerly winds.

10 *Chart 8a.*

Coast.—Islands and dangers.—Beacon.—From Ras Muhammad (page 112) the western shore of the Gulf of 'Aqaba trends 47 miles north-north-eastward to Marsa Dahab and is fringed by a white reef which is usually covered, the sea breaking over its outer edge; outside

15 this reef the water, due to its great depths, is of an intensely blue colour. This reef renders approach to the shore dangerous, even for boats, except at a few places which are described below.

Between Ras Muhammad and Ras Nazrāni (Nuzerani), about 17 miles north-north-eastward, the coast is high and precipitous.

20 *Charts 2838, 757.*

Marsa Bareika or El Ghazlāni (Ghazulāni), on the north-eastern side of the isthmus connecting Ras Muhammad with the Sinai peninsula, is deep.

Charts 3047, plan of Sherm Sheikh and Sherm el Moiyah; 757.

25 About 4 miles north-north-eastward of Sandy point, the northern entrance point of Marsa Bareika, is a rocky point separating two bays, Sherm el Sheikh and Sherm el Moiya; Sherm el Sheikh, the western bay, is free from dangers, but Sherm el Moiya is encumbered with coral patches, and the coral reef on the north-western side of its

30 entrance was reported, in 1943, to be extending further offshore. A conspicuous grey stone house is situated about half a mile north-north-eastward of the south-western extremity of the rocky point separating the two bays.

Chart 3595, plan of Strait of Tiran.

35 Just northward of Ras Nazrāni the coastal reef extends to as much as 5 cables offshore and is marked at its south-eastern edge by a beacon, consisting of an iron tripod, 26 feet (7^m9) in height, surmounted by a red truncated cone.

Chart 8a.

40 The coast between Ras al Fasma, the eastern entrance point of the gulf, and Ras Fartak (*Lat.* $28^{\circ} 08' N.$, *Long.* $34^{\circ} 43' E.$), $6\frac{3}{4}$ miles north-north-westward, is fringed by a reef and is somewhat indented; some rocks, with depths of less than 6 feet (1^m8) over them, lie from about one to 3 miles offshore south-westward of Ras Fartak.

45 Sharm Mujawan, 6 miles north-eastward of Ras Fartak, is a cove with a sandspit in its centre; Sharm Dhab'a, $4\frac{1}{2}$ miles further north-north-eastward, has a bar with a depth of 2 feet (0^m6) over it.

The coast between Ras Fartak and Sharm Dhab'a is fringed by a reef.

Charts 3047, plan of Dahab; 8a.

50 Marsa Dahab lies on the western side of the gulf, on the southern side of a low sandy promontory, which is fringed by a reef, awash; from the south-eastern end of this promontory a low, sandy, barren spit extends about 5 cables south-westward and thence 5 cables westward, and from the southern extremity of this spit a reef, which

Charts 8a, 2523.

Charts 3047, plan of Dahab; 8a.

dries, extends about 3 cables south-south-westward. The northern shore of the bay, on which stands a village, is fringed by a reef, with a depth of 3 feet (0^m9) over it, and which extends to as much as one cable offshore. A single palm which, in 1936, was conspicuous, stands 5 on the northern shore.

Chart 3047, plan of Dahab.

A shoal, with a depth of 2½ fathoms (5^m0), coral, over it, lies 1½ cables westward of the heap of brown stones on the western extremity of the sandy spit, and 2 cables farther westward is a shoal, with a least depth 10 of 4½ fathoms (8^m7). The western extremity of the spit is fringed by a reef, and a shoal bank, with a least depth of 1½ fathoms (2^m3), extends about half a cable westward and north-westward of it.

Chart 8a.

Ras Abu Qalûm (Arser), 8 miles north-north-eastward of the 15 north-eastern point of the promontory described above, is a sandy promontory, the northern part of which is fringed by a reef.

Charts 3047, plan of Wasîl anchorage; 8a.

Wâsit, about 13 miles north-north-eastward of the north-eastern extremity of Ras Abu Qalûm, is a low sandy point, on which are some 20 stunted trees; within this point is a flat plain of sand and stones rising gradually to the base of the mountains. The coast in this vicinity is steep-to to within a distance of about 2 cables, but about one mile south-westward foul ground extends some distance offshore.

Chart 8a.

Bir al Mashiya, on the eastern side of the gulf, 38 miles north-north-eastward of Sharm Dhab'a, is a sandy point fringed by rocks; from about 6½ miles southward to 7 miles northward of this point, a bank, with depths of less than 50 fathoms (91^m4) over it, extends to as far as about 2 miles offshore; some rocks, with depths of less than 6 feet 30 (1^m8), lie on the northern part of this bank, within three-quarters of a mile of the shore.

Nuweiba' el Terabîn (Nawibi), a low sandy promontory on the western side of the gulf, about 7 miles north-north-eastward of Wâsit, is covered with low bushes and sandhills; a little south-westward is 35 a palm grove. A fort, which is not visible from southward if a vessel is close inshore, stands about 3 miles northward of Nuweiba' el Terabîn (Lat. 29° 00' N., Long. 34° 41' E.), and is visible from a distance of 5 miles. Scattered rocks lie close northward and eastward of this 40 promontory.

Abu Ramla, about 12 miles northward of Nuweiba' el Terabîn, is the north-eastern entrance point of a small bight; the vicinity of this bight is indicated by a conspicuous white patch of sand, called White cape on the chart, situated on the coastal range, about 2½ miles north-north-eastward of Abu Ramla. 45

Charts 3047, plan of Humaidha island anchorage; 8a.

Humaidha island, on the eastern side of the gulf, about 19½ miles north-north-eastward of Bir al Mashiya, lies in the centre of the entrance to a small bay, and is connected with the mainland north-eastward by a reef, partly above water; it is difficult to identify and 50 must not be confused with a table-topped point about 2½ miles farther northward. In 1933, this island was reported to be of a greyish colour, which contrasts with the pink cliffs in the background. The northern part of this bay is encumbered with rocks.

Charts 8a, 2523.

Charts 3595, plan of Jezirat Faraun; 8a.

Jezirat Fir'aun (Faraun), lying on the western side of the gulf, about 15 miles northward of White cape and $1\frac{1}{4}$ cables offshore, has on it some towers and ruins, and is fringed by a reef.

5 Charts 3595, plan of Aqaba bay; 8a.

The head of the Gulf of 'Aqaba is very low, being the termination of Wādi al 'Araba, which is sandy, with high mountains on either side. *Chart 3595, plan of Aqaba bay.*

The village of 'Aqaba, at the head of a bight on the eastern side of the head of the gulf, stands in an extensive date grove. A white custom house stands on the coast, close south-westward of the village, and is very conspicuous; Chatham pier, fronting the custom house, and Victoria pier, $3\frac{1}{2}$ cables northward, are both in ruins.

The head of this bight is foul to a distance of about one cable offshore.

15 Chart 8a.

Abnormal magnetic variation.—Abnormal magnetic variation of from 2 to 3 degrees easterly deflection was reported, in 1938, along the whole length of the eastern side of the Gulf of 'Aqaba; at 'Aqaba itself, however, the variation was normal.

20 Chart 3047, plan of Sherm Sheikh and Sherm el Moiyah.

Anchorages.—Sherm el Sheikh affords good anchorage in depths of about 14 fathoms (25^m6), sand, about $1\frac{1}{4}$ cables from its north-eastern side, but caution is necessary when anchoring as the depths westward increase suddenly. Good anchoring marks are the 65-foot (19^m8) hill, situated about 3 cables north-north-eastward of the eastern entrance point of the bay, and a square brown stone building, in ruins, the tomb of a sheikh, situated on the north-eastern side of this bay.

Sherm el Moiya which, as already stated, is encumbered with coral patches, is only available for small vessels of a draught not exceeding 10 feet (3^m0); vessels of deeper draught can only pass between these patches with great caution, and there is no anchorage outside them. *Chart 8a.*

Good anchorage can be obtained by small vessels with local knowledge southward of Ras Fartak (*Lat. $28^{\circ} 08' N.$, Long. $34^{\circ} 43' E.$*);

35 Sharm Mujawan affords secure anchorage to small vessels with local knowledge in depths of about $2\frac{1}{2}$ fathoms (4^m6); Sharm Dhab'a can also be used by small vessels with local knowledge. The water in these anchorages is very discoloured, and they should be sounded before entering.

40 Chart 3047, plan of Dahab.

Marsa Dahab affords anchorage to large vessels in depths of 16 fathoms (29^m3), sand and coral, well sheltered from northward and eastward, with the western extremity of the sandy spit, bearing 030° , distant $3\frac{1}{2}$ cables.

45 Small vessels can anchor in depths of about 12 fathoms (21^m9), good holding ground, with good shelter, with the western extremity of the same spit, bearing about 232° , distant three-quarters of a cable, but care must be taken to avoid the shoal water extending westward and north-westward of the western extremity of this spit.

50 H.M.S. *Aphis* anchored, in 1942, in a depth of 7 fathoms (12^m8), with the conspicuous palm on the northern shore bearing 034° and the western extremity of the sandy spit 086° .

H.M.S. *Weston* found good anchorage, in 1936, with the western extremity of the sandy spit, bearing 120° , distant 3 cables.

Charts 8a, 2523.

Chart 8a.

Anchorage can be obtained by small vessels with local knowledge under the lee of Ras Abu Qalûm.

Chart 3047, plan of Wasit anchorage.

Anchorage may be obtained southward of Wâsit, with shelter from northerly winds, but it is only recommended for very small vessels which, in bad weather, could lie within one cable of the coast, as the northerly wind and swell run round the point, so that good shelter is only obtainable close inshore. The best berth for a somewhat larger vessel is in a depth of 18 fathoms (32^m9), sand and coral, about 1½ cables offshore, with the eastern extremity of Wâsit, bearing 051°, distant 4 cables. When approaching this anchorage care must be taken to avoid the foul ground extending offshore one mile farther southward.

Chart 8a.

Temporary anchorage may be obtained by small vessels with local knowledge in depths of about 6 fathoms (11^m0), southward of Bir al Mashiya, well sheltered from northerly winds.

Anchorage, well sheltered from northerly winds, can be obtained by small vessels with local knowledge in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand and coral, south-westward of Nuweiba' el Terabîn, but care must be taken to avoid several coral reefs, with depths of less than 2 feet (0^m6) over them, which lie in the western part of this roadstead. This anchorage is not good in southerly winds as there is not sufficient swinging room and the bottom shelves steeply. Discoloured water may be seen here due to heavy rain washing down sand.

Small vessels with local knowledge can obtain anchorage off the fort (page 281) 3 miles northward of Nuweiba' el Terabîn, but it is open to the prevailing wind.

There is anchorage, sheltered from northerly winds, for small vessels with local knowledge on the south-western side of Abu Ramla.

Chart 3047, plan of Humaidha island anchorage.

There is good anchorage, sheltered from all winds, between Humaidha island (Lat. 29° 13' N., Long. 34° 54' E.) and the mainland; it must be entered from south-westward. Small vessels can obtain anchorage in depths of 30 fathoms (54^m9), sand and coral, with the summit of this island bearing 322° and the southern entrance point of the bay 225°.

Chart 8a.

Between White cape and Jezîrat Fir'aun there are three small bays which afford anchorage, sheltered from north-easterly winds, to small vessels with local knowledge; these bays lie 2, 7½, and 11 miles distant, respectively, from White cape.

Chart 3595, plan of Jezîrat Faraun.

Vessels can anchor either northward or southward of Jezîrat Fir'aun, according to the direction of the wind, but with strong southerly winds neither anchorage is recommended as, except for very small vessels, there is then but little shelter. Good berths for vessels of moderate size are in depths of 20 fathoms (36^m6), coral, with the northern extremity of the island, bearing 197°, distant 1½ cables, or, in depths of 18 fathoms (32^m9), sand, with the southern extremity of the island, bearing 008°, distant 1½ cables. Large vessels can find anchorage, in a depth of 19 fathoms (34^m7), coral, with the northern extremity of this island, bearing 213°, distant 3 cables.

Chart 3595, plan of Aqaba bay.

Anchorage may be obtained off 'Aqaba village in depths of about 20 fathoms (36^m6), sand and coral, from 2 to 2½ cables offshore; this anchorage is exposed to southerly winds, which sometimes in winter, usually from south-south-westward, attain great force and raise a heavy sea, when vessels probably could not remain here. Care must be taken to allow sufficient swinging room. Approaching from westward a good anchor mark is a small ruin, resembling a coronet, which is situated 5 cables south-south-westward of the custom house.

- 10 The depths off the northern side of the head of the gulf are very regular, and there is anchorage, sheltered from northerly winds, in depths of from 17 to 20 fathoms (31^m1 to 36^m6), from 2¼ to 3 cables offshore, but southerly winds, which are sometimes very strong, raise a heavy sea, when the anchorage would probably be untenable.

15 *Charts 3595, plan of Strait of Tiran; 8a.*

- Directions.**—The entrance to the Gulf of 'Aqaba is encumbered by Tiran island and the reefs in its vicinity (*see* view facing page 290); the Strait of Tiran lies between the island and the coast of the Peninsula of Sinai westward. There are two passages through this strait, i.e.,
- 20 Enterprise passage and Grafton passage; the wind is very strong here and there is, at times, a heavy swell in these passages causing considerable tide-rips.

- Both passages are deep and free from dangers; the edges of the reefs on either hand are steep-to and are clearly visible. A vessel
- 25 from southward should steer for a position 2½ miles westward of the south-western extremity of Tiran island, and she should then steer a northerly course passing through the centre of Enterprise passage. After passing westward of Gordon reef a north-north-easterly course should be steered up the gulf.

- 30 In the Strait of Tiran (*Lat.* 28° 00' N., *Long.* 34° 28' E.) only Enterprise and Grafton passages should be used, as although the passages between the central reefs are deep and free from dangers, they are narrow, and a dangerous current often sets across them.

Chart 8a.

- 35 **RAS AL FASMA TO AL MUWAILIH.**—**Aspect.**—Between Ras Al Fasma, the eastern entrance point of the Gulf of 'Aqaba and 'Ainūna bay (Aynunah) bay, 30 miles eastward, the coast is low, sandy, rising gradually inland, deeply indented, and fronted by coral reefs, with narrow intricate channels between them, barely navigable
- 40 by boats. Between 'Ainūna bay and Al Muwailih (Mowila), 26 miles south-eastward, the patches of reef are farther apart, and in places deep water extends to within a short distance of the coast, which is backed by mountains, attaining an elevation of 7,478 feet (2,279^m3). The mountains in this locality lie from 10 to 17 miles inland.
- 45 'Ainūna valley, between two barren rocky hills, lies 1½ miles inland; about 2 miles inland a long line of cliffs rises from the plain and forms the outer edge of an extensive tableland. The appearance of this luxuriant, though uncultivated, tract contrasts strangely with the wild sterility of the neighbouring scenery. On both sides of the valley lie
- 50 ruins, and between it and the beach stand the remains of an aqueduct. Jabal 'Ainūna (Jebel Aynunah) is situated about 15 miles northward of the bay, and is at the north-western end of a range which extends about 27 miles south-eastward. *See* views facing pages 290 and 291.

Charts 8a, 2523.

Chart 8a.

Off-lying islands and dangers.—The relative positions of the off-lying islands, coastline, and topography, on this section of the coast, were reported, in 1938, to differ considerably from the positions shown on the chart. 5

Shūsha (Shushuah) island, composed of red and yellow sandstone, mixed with coral, lying 9 miles eastward of Sanāfir island, gradually rises to a bluff at its southern end ; on easterly and westerly bearings it appears wedge-shaped. A coral reef extends about 2 miles south-westward from a position $1\frac{1}{2}$ miles westward of the northern extremity 10 of Shūsha ; the western and south-western sides of this island are steep-to, but its eastern and southern sides are fringed by a reef which extends half a mile south-eastward of its south-eastern extremity, and a bank, on which lie some rocks, with depths of less than 6 feet (1^m8) over them, extends to as much as $1\frac{1}{2}$ miles eastward of the 15 island.

Barqān (Barakan) island, 7 miles eastward of Shūsha island, consists of two parts connected by a low sandy isthmus, so that from the offing it has the appearance of being two wedge-shaped islands ; from a short distance it appears broken and rugged. This island is fringed 20 by a reef extending to as much as one mile from it ; a bank, on which are some rocks, with depths of less than 6 feet (1^m8) over them, extends $3\frac{1}{2}$ miles north-westward of the north-western extremity of the island. A detached reef, with a depth of less than 6 feet (1^m8), lies $3\frac{1}{2}$ miles south-eastward of the south-eastern extremity of Barqān island. 25

Shi'b Pelham, with a depth of less than 6 feet (1^m8) over it, lies about 4 miles south-south-eastward of Barqān island.

Yuba' island (*Lat.* 27° 46' N., *Long.* 35° 08' E.), lying $6\frac{1}{2}$ miles south-south-eastward of Barqān island, is precipitous and cliffy at its northern end, sloping gradually to its south-eastern end ; the south- 30 western side of this island is fringed by a reef on which are some rocks, above water. Wyler islet and Julaijila (Jelaijili) islet, about one and $2\frac{1}{2}$ miles eastward, respectively, of the north-eastern and southern extremities of Yuba' island, consist of coral, and are low-lying. A rock, with a depth of less than 6 feet (1^m8) over it, which 35 is steep-to, lies one mile south-eastward of Yuba' island.

Silāh islets, $5\frac{1}{2}$ miles south-south-eastward of Julaijila islet, are a low coral group lying on a reef, which has depths of less than 6 feet (1^m8) over it ; a detached reef, with depths of less than 6 feet (1^m8), lies about half a mile north-westward of the north-western end of this 40 reef. These islets were reported, in 1938, to lie about 3 miles south-eastward of their charted position.

Anchorage.—There is anchorage for small vessels with local knowledge in depths of from 7 to 10 fathoms (12^m8 to 18^m3), sand and rock, on the bank extending eastward of Shūsha island. 45

Anchorage can be obtained by small vessels with local knowledge in a depth of 12 fathoms (21^m4), sand, near the south-eastern extremity of Barqān island, well sheltered from north-westerly winds, also eastward of the isthmus joining the two parts of that island, in depths of from 7 to 15 fathoms (12^m8 to 27^m4) ; a good berth must be given to 50 the southern part of the island when rounding it for this latter anchorage, which should not be steered for until the isthmus bears about 270°. A good look-out aloft is necessary as there are, in this locality, many uncharted coral reefs, awash.

Chart 2523.

Chart 8a.

Coast.—Island and dangers.—Between the off-lying islands and the coast there are numerous reefs with deep water between them.

'Ainūna bay, although its approach is much encumbered with rocks and reefs, can, with local knowledge, be entered; a pilot can probably be obtained at Barqān island.

Maqsūr (Maksur) island, about 2 miles southward of the southern entrance point of 'Ainūna bay and one mile offshore, lies on a reef which extends about 4 miles north-westward and $3\frac{1}{2}$ miles southward of it.

Halq al Kalawa (Halk el Kalawa), lying about $6\frac{1}{2}$ miles south-south-westward of Ras Wadi Tiryām (Wadi Turiam), a promontory 15 miles south-eastward of the southern entrance point of 'Ainūna bay, is a detached rock, with a depth of less than 6 feet (1^m8) over it.

The village of Al Muwailih, consisting of some huts and a few stone houses, has a fort, with a minaret inside it, standing on its southern side.

A bank, on which lie some rocks with depths of less than 6 feet (1^m8) over them, extends about $8\frac{3}{4}$ miles westward of Al Muwailih to within a short distance of the Silāh islets; two rocks, with depths of less than 6 feet (1^m8), lie close together one mile south-westward of the south-western extremity of this bank. A detached shoal, with a depth of 5 fathoms (9^m1) over it, lies close southward of this bank, about $4\frac{1}{2}$ miles south-westward of Al Muwailih fort (*Lat. $27^\circ 40' N.$, Long. $35^\circ 29' E.$*); the sea sometimes breaks over this shoal, and it was reported, in 1915, that there was probably less water over it.

Between the 5-fathom (9^m1) patch just described and a reef, about one mile southward, is a deep channel, but there may be dangers in it, so this approach to Al Muwailih is not recommended.

Anchorage.—Directions.—Between the coast and the reef lying 6 miles south-south-westward of Al Muwailih fort is a deep channel which continues northward over the bank extending westward of Al Muwailih, with a least depth of 25 fathoms (45^m7), but a spit, on which stand some palm trees, extends west-south-westward of the fort, and continues for some distance under water; with a favourable light this spit is clearly visible, and when approaching the anchorage can be rounded by eye.

Vessels bound for Al Muwailih should use the southern route, which appears to be clear of dangers, approaching the coast about 18 miles southward of Al Muwailih fort, and turning north-north-westward along it. The approach from southward of Yuba' island can also be used, avoiding Halq al Kalawa, which is not visible until close-to. See view facing page 291.

With light winds small vessels with local knowledge might anchor among the shoal patches on the banks, and the temporary anchorage recommended off Al Muwailih is, in a depth of 5 fathoms (9^m1), on a coral bank, about 5 cables in extent, with the minaret in the fort, bearing 111° , distant $3\frac{1}{2}$ miles.

AL MUWAILIH TO RAS ABU MADHĀRIB.—Aspect.—From Al Muwailih the coast, which is somewhat indented, trends about 35 miles south-south-eastward to Ras Abu Madhārib (Abu Massahrib), and for the last 10 miles of this stretch is fringed by a reef; the coast is low and the land rises gradually from it to the base of the steep mountains about 10 miles inland.

Chart 2523.

Chart 8a.

Jabal Muwailih extends about 13 miles north-westward from a position 16 miles east-south-eastward of Al Muwailih fort; High peak, which is situated near the south-eastern end of this range, is conspicuous, as is Sharp peak, $3\frac{1}{2}$ miles farther north-westward. The range consists of very sharp ridges which, on some bearings, show as peaks, especially from southward, when they have an irregular columnar appearance, with chasms between them; from northward most of the peaks overlap each other, and the range then appears as a narrow ridge. See view facing page 291.

Off-lying island and dangers.—Anchorage.—A bank, on which are some rocks, with depths of less than 6 feet (1^m8) over them, extends about 10 miles south-south-eastward from a position $5\frac{1}{2}$ miles south-south-westward of Al Muwailih fort, and lies from about 3 to 4 miles offshore; a detached rock, with a depth of less than 6 feet (1^m8), lies $1\frac{1}{2}$ miles south-eastward of this bank.

About $7\frac{1}{2}$ miles south-south-eastward of this detached rock is another bank, on which are several coral patches and rocks, which extends 5 miles south-eastward and lies from about 3 to 5 miles offshore; this bank is reported to lie farther southward.

Na' mĀn (Noman) island, lying 2 miles westward of Ras Abu Madhārib (*Lat.* $27^\circ 08' N.$, *Long.* $35^\circ 46' E.$), is low and sandy at its northern end, whence it rises gradually to its southern end where it attains an elevation of about 400 feet (121^m9) in abrupt red limestone cliffs and hills; these hills are fringed by a few bushes, but are otherwise destitute of vegetation and present a very rugged appearance. Sharm Na' mĀn (Sherm en Noman), a small inlet, indents the eastern side of the island. From the northern end of this island a reef, which is steep-to, and which has depths of less than 6 feet (1^m8) over it, extends $4\frac{1}{2}$ miles north-north-westward.

Chart 3047, plan of Sherm en Noman.

Sharm Na' mĀn affords good anchorage in depths of from $4\frac{1}{2}$ to 8 fathoms (8^m7 to 14^m6), coral, and is sheltered from all winds, as its sides rise almost vertically from the sea to elevations of from 80 to 100 feet (24^m4 to 30^m5).

Chart 8a, with plan of Sherm Yahar.

Coast.—Dangers.—Sharm Yahar, $3\frac{1}{2}$ miles south-eastward of Al Muwailih, the shores of which are fringed by reefs, is difficult to identify, as the coast is low-lying in this vicinity.

Chart 8a, with plan of Sherm Jūbba.

Sharm Jubba, 3 miles south-south-eastward of Sharm Yahar, is fringed on both sides of its entrance by reefs, which render the entrance channel somewhat tortuous; further in the shores are also, in places, fringed by reefs.

Chart 8a.

Sharm Zubeir (Sherm Zibber), $14\frac{1}{2}$ miles south-south-eastward of Sharm Jubba, is entirely filled in and the site is covered with vegetation.

Sharm Qafāfa (Sherm Kafafa), 2 miles south-eastward of Sharm Zubeir, has not been examined; a small wooden jetty on the north-western side of the entrance affords fairly good landing, and there is a conspicuous white house on the northern side of this inlet.

Dhabā (Diba) village, consisting of a few small houses and a fort, is situated on the coast one mile east-south-eastward of Sharm Qafāfa; a mosque stands near the coast $2\frac{1}{2}$ miles south-eastward of Dhabā.

Chart 8a.

From a point $1\frac{1}{2}$ miles southward of this mosque the coast, as far as Ras Abu Madhārib, is fringed by a reef which extends to as much as one mile offshore, and from the coast westward of the mosque, between 5 it and Ras Abu Madhārib, a bank extends to as much as 3 miles offshore; on this bank, about $3\frac{1}{2}$ miles south-south-westward of the mosque and 2 miles offshore, is a reef, with a depth of less than 6 feet (1^m8) over it.

Between Na' mān island and the coast are some detached rocks, 10 with depths of less than 6 feet (1^m8) over them.

Chart 8a, plan of Sherm Yahar.

Anchorage.—Anchorage may be obtained in depths of from 6 to 8 fathoms (11^m0 to 14^m6), well sheltered from the prevailing winds, about 2 cables within the entrance to Sharm Yahar.

15 *Chart 8a, plan of Sherm Jūbba.*

There is good and secure anchorage in depths of from 5 to 7 fathoms (9^m1 to 12^m8) about 6 cables within the entrance to Sharm Jubba.

*Charts 8a, 8b.***RAS ABU MADHĀRIB TO RAS KARKAME.—Aspect.**

20 Between Ras Abu Mahdārib (*Lat.* 27° 08' N., *Long.* 35° 46' E.) and Sharm Habbān, 75 miles south-south-eastward, the coast is fronted by steep overhanging cliffs of coral and sandstone; a level ledge of rocks, the outer part of which nearly dries and rises like a wall from a considerable depth, extends about 40 yards (36^m6) from the base of 25 these cliffs. Against this ledge the sea, at times, breaks with violence and produces a surf which renders landing between the inlets almost impracticable.

Chart 8a.

The coast from Ras Abu Madhārib to Sharm Jazza (Sherm Jezza), 30 14 $\frac{1}{2}$ miles south-eastward, is fringed by a reef, and from 2 miles east-south-eastward of Sharm Jazza the coast trends about 20 miles farther south-eastward to Sharm Dumāgha (Sherm Dumeigh) and is fringed by a reef, which is steep-to.

Charts 8a, 8b.

35 From Sharm Dumāgha the coast trends 18 $\frac{1}{2}$ miles south-south-eastward to Ras Murābit (Morabit) and thence about 15 miles farther south-south-eastward to Ras Kharāba; a reef fringes the coast from 1 $\frac{1}{2}$ miles north-north-westward to 7 $\frac{1}{2}$ miles south-south-eastward of Ras Murābit, and the coastal reef extends about half a mile offshore 40 from about three-quarters of a mile northward to three-quarters of a mile south-eastward of Ras Kharāba.

Chart 8b.

From Ras Kharāba the coast trends 6 $\frac{1}{2}$ miles south-eastward and thence 2 miles eastward to Sharm Munaibira (Sherm Minaibara), 45 whence it trends 11 miles southward to Ras Karkame (Kurkuma).

Chart 8a.

Jabal 'Antar, 13 miles north-north-eastward of Ras Murābit and 9 $\frac{1}{2}$ miles inland, is conspicuous; two small peaks, near the centre of this mountain, serve to identify it from seaward.

50 *Charts 8a, 8b.*

Jabal 'Antar is near the north-western end of a range which trends about 63 miles south-eastward; Jabal Jal (Jebel Raal), near the south-eastern end of this range, is a conspicuous isolated mountain with a broad summit.

Charts 8a, 2523.

Chart 8a, 8b.

Between Ras Abu Madhārib and Ras Kharāba low hills closely approach the coast.

Chart 8a.

Off-lying islets and dangers.—Large patches of coral reefs lie from 2 to 8 miles off this coast, and there are deep channels between these patches and several low sandy islets on the off-lying banks; these reefs should not be approached closely without local knowledge.

From eastward of the southern end of Na' mĀn island a bank extends to as much as 2 miles offshore for a distance of $7\frac{1}{2}$ miles south-eastward; on this bank are several rocks, with depths of less than 6 feet (1^m8) over them.

From a position about 9 miles southward of Ras Abu Madhārib (Lat. $27^\circ 08' N.$, Long. $35^\circ 46' E.$) a bank, on which there are numerous rocks, with depths of less than 6 feet (1^m8) over them, extends 36 miles south-eastward; some of these rocks lie within about $2\frac{1}{2}$ miles of the coast.

Shi'b Massawik is the name given to the group of rocks and shoals at the north-western end of this bank. Nabqīya (Nabakiya) islet, lying about the middle of the bank, is low, sandy, and covered with bushes; it is fringed by a reef. 'Uwainidhiya (Uweindiya) islet, lying 8 miles south-south-eastward of Nabqīya islet, is also low and sandy; a reef extends $4\frac{3}{4}$ miles north-westward and one mile south-eastward of this islet.

Charts 8a, 8b.

A bank, lying about $2\frac{1}{2}$ miles offshore, on which are several coral patches and rocks, extends 5 miles south-south-eastward from a position $6\frac{3}{4}$ miles north-westward of Ras Murābit.

Chart 8b.

A bank, the western extremity of which is situated 7 miles westward of Ras Kharāba, extends $5\frac{1}{2}$ miles eastward and $6\frac{1}{2}$ miles east-south-eastward to within about $1\frac{1}{2}$ miles of the coast; some islets and many rocks, with depths of less than 6 feet (1^m8) over them, lie on this bank; Raiyikha (Raikha) islet, the westernmost one, is rocky, and rises gradually from its eastern end to an elevation of 50 feet (15^m2) at its centre and its western end. Some detached rocks, with depths of less than 6 feet (1^m8), lie from within one to $7\frac{1}{2}$ miles east-south-eastward of Raiyikha islet.

Mardūna islet, lying about 7 miles south-eastward of Raiyikha islet and $2\frac{1}{2}$ miles offshore, consists of a coral ridge, in detached pointed masses, about 200 feet (61^m0) high.

Sheikh Mirbat, a low coral islet, on which is a conspicuous tomb, lies 3 miles westward of Ras Karkame, and is fringed by a reef; a rock, about 12 feet (3^m7) high, lies close to its western end, and another rock, about one foot (0^m3) high, about three-quarters of a mile west-north-westward of it. The approach to this islet is safe, as the reef fringing it and the reefs southward are visible.

Chart 8a.

Anchorage.—Anchorage, available for small vessels with local knowledge, can be obtained near several of the sandy islets on the off-lying banks.

Small vessels with local knowledge can obtain anchorage in moderate weather on the bank which lies about 2 miles offshore for a distance of $7\frac{1}{2}$ miles south-eastward of Na' mĀn island.

Charts 8a, 8b.

There is good anchorage for small vessels with local knowledge on the south-eastern side of Nabqīya islet, off the eastern side of 'Uwainidhiya islet, and on the eastern side of the bank north-westward of Ras Murābit.

Chart 8b.

Vessels with local knowledge can obtain good anchorage in depths of from 10 to 12 fathoms (18^m3 to 21^m9), on the bank, southward of the rocks between Raiyikha islet and the islets eastward of it.

10 *Chart 8a.*

Coast.—Dangers.—A 12-fathom (21^m9) patch lies 12 miles south-south-eastward of Ras Abu Madhārib (*Lat.* 27° 08' N., *Long.* 35° 46' E.) and 3 miles offshore.

Sharm Jazza, in the entrance to which lies a rock, with a depth of 15 less than 6 feet (1^m8) over it, is a small inlet, and the land in the vicinity is barren; a stratum of black stone on the surface of the hills and plains gives a black and desolate appearance to this neighbourhood.

Mersa Zubaida (Zobaida), on the eastern side of a peninsula, the southern extremity of which is situated 5 miles south-south-eastward 20 of Sharm Jazza, is fringed by the coastal reef.

Chart 14, plan of Sherm Dumeigh.

Sharm Dumāgha is entered between Twigg point and South point, 1½ cables south-eastward; both points are fringed by reefs, and the shores of the inlet are fringed by a bank on which are some rocks.

25 There is no vegetation here, except a few bushes. Just within South point is a lagoon which is separated from the inlet by a reef, which dries.

North rock is the name given to a small projection from the centre of the northern side of this inlet; it is fringed by rocks, and there 30 are several coral patches lying within 1½ cables of it.

Chart 8a.

Sharm 'Antar, 3 miles south-south-eastward of Sharm Dumagha, is a small cove.

Chart 8b.

35 Mersa Za'am, 7 miles south-south-eastward of Ras Murābit, is a small bight entered through a gap in the coastal reef; this gap appears to be deep and free from dangers. There is apparently good landing on a sandy beach within.

Chart 8b, with plan of Sherm Wej.

40 Wejh (Wej), an inlet 2½ miles south-south-eastward of Mersa Za'am, is free from dangers in its approach; its shores are fringed by reefs, and the entrance channel is about 1½ cables wide in the fairway. A fort, nearly surrounded by hills, lies about 6 miles eastward of the head of this inlet.

45 The coast in the vicinity consists of coral cliffs from 50 to 70 feet (15^m2 to 21^m3) high; between these cliffs and the steep hills, about 3 or 4 miles inland, lies a low salt-encrusted plain which is marshy near the coast.

The village of Wejh stands on the north-western shore of the inlet 60 and consists of some stone houses, minarets, and the ruins of a fort; two jetties, which are in ruins, extend from the village, near its south-western end.

Chart 8b.

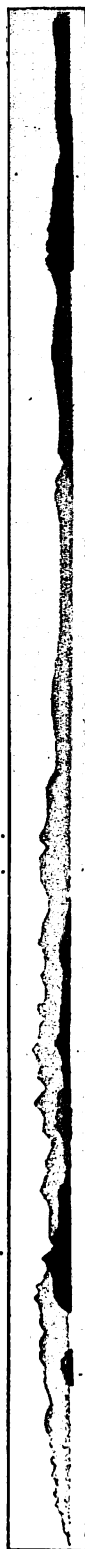
A small patch, which cannot always be seen, lies a short distance

Charts 8a, 2523.

To face page 290.

Tirān island, bearing
203°, distant 23 miles.

Jebel
Katherina. Mount Sinai.



Sanāfir island.

Shūsha island.

South-eastern approach to Strait of Tirān.

Jebel
Almāna.

Sharp
peak.

Ass's Ears.

Sugarloaf.

Peak (7,478 ft.)



Sharp peak, bearing
098°, distant about
21 miles.

High peak.

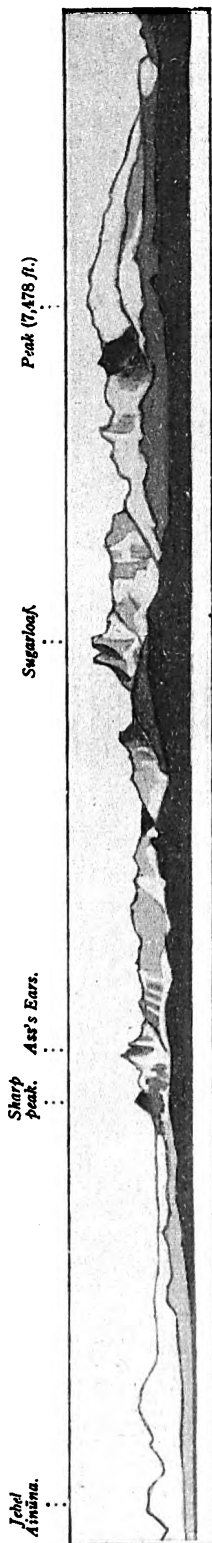


Mount al Muwallih.

View, in two parts, of western approach to Al Muwallih.

(Originals dated 1893.)

To face page 201.



Al Muwailih,
bearing 351°, distant
about 10 miles.

Sharp peak. High peak. Peak (4,420 ft.).



Jabal Muwailih.

Two views of southern approach to Al Muwailih.

Sugar loaf,
bearing 351°,
distant 30 miles.

Jabal
Hafina.

Round mountain.

Jabal Radhwa.

Ras Baridi.

Western approach to Yenbo'.
(Originals dated 1933.)

Chart 8b.

from the visible coastal reef off Ras Kharāba; an opening in the coastal reef here affords good landing.

Mersa Wadi al Miyāh (Wadi el Mia), $1\frac{1}{2}$ miles east-south-eastward of Ras Kharāba, affords anchorage for dhows inside the coastal reef; there is a landing place for boats, approached through a narrow break in this reef. Mersa Wadi al Miyāh may be identified from northward by a bluff sloping to the low coast which, southward of this bluff, is covered with scrub; farther southward is another bluff, covered with black soil or stones, but not so conspicuous. 5

Charts 3047, plan of Sherm Habbān; 8b. 10

Sharm Habbān (*Lat.* $26^{\circ} 06' N.$, *Long.* $36^{\circ} 32' E.$), about $3\frac{1}{2}$ miles south-eastward of Mersa Wadi al Miyāh, is a narrow inlet, the shores of which are fringed by reefs, two projections of which extend $1\frac{1}{2}$ cables and one cable, respectively, from the south-eastern side; a detached reef lies near the centre of the entrance. The existence of the detached reef and of the projections is indicated by discoloured water. 15

Chart 8b.

The coast, between Sharm Habbān and Ras Karkame, is low and sandy, with low coral cliffs in places; a bank, with depths of less than 50 fathoms (91^m4), extends offshore to a position $7\frac{1}{2}$ miles west-south-westward of Mardūna islet and 7 miles westward of Ras Karkame. 20

An above-water rock lies in Sharm Munaibira, and another one in the cove about half a mile westward.

From a position $3\frac{1}{2}$ miles southward of Sharm Munaibira a reef, with depths of less than 6 feet (1^m8) over it, extends $4\frac{1}{2}$ miles southward and lies $2\frac{1}{2}$ miles offshore. 25

Ras Karkame is fringed by the coastal reef which extends about $2\frac{1}{2}$ miles west-south-westward; close eastward of Sheikh Mirbat, between it and the coastal reef, is a detached reef with depths of less than 6 feet (1^m8) over it. Within Ras Karkame the land rises gradually to Jabal Karkame, 400 feet (121^m9) high, about 2 miles eastward. 30

Chart 8a.

Anchorage.—Directions.—A low wooded point, about 3 miles south-south-eastward of Ras Abu Madhārib, affords good shelter for small craft with local knowledge during strong north-westerly winds. 35

Mersa Zubaida affords sheltered anchorage to vessels with local knowledge in depths of from 10 to 30 fathoms (18^m3 to 54^m9), but the holding ground is bad.

Chart 14, plan of Sherm Dumeigh. 40

Vessels can obtain well sheltered anchorage in depths of from 9 to 13 fathoms (16^m5 to 23^m8), soft sand and coral, good holding ground, in the north-western part of Sharm Dumāgha, which is landlocked.

Charts 14, plan of Sherm Dumeigh; 8a.

A vessel bound to Sharm Dumāgha should keep well outside all dangers until Jabal 'Antar bears 067° ; some pyramidal sandhills stand near the coast southward of this line of bearing. A vessel should approach with the mountain on this bearing until about one mile from the coast; she should then alter course northward, keeping about one mile offshore, until Punch's Cap, a conspicuous hill with a rugged peak, is in line with Mark rock, a conspicuous white rock on the coast on the north-eastern side of Sharm Dumāgha, bearing 040° (*see view on plan*), which transit leads through the fairway of the entrance. 45

A vessel without local knowledge should mark the channel before 50

Charts 8a, 2523.

Charts 14, plan of Sherm Dumeigh; 8a.

entering, in order to avoid the coral patches near the middle of the inlet, and the bank extending half a cable eastward from the western side of the entrance. The best time to enter is with the sun high or
5 astern, and at low water, as the reefs are then visible.

Chart 8a.

Sharm 'Antar affords good anchorage to small vessels with local knowledge.

Chart 8b, with plan of Sherm Wej.

10 Wejh (Lat. $26^{\circ} 13' N.$, Long. $36^{\circ} 27' E.$) affords good anchorage to small vessels, the best berth being in depths of 7 fathoms (12^m8), a little over one cable south-south-eastward of the south-eastern extremity of the village. A north-westerly swell sets into the inlet.

There is room for one vessel, moored head and stern, close inside the
15 northern entrance point, where the bottom is clay, and sheltered from the swell which sets across the entrance; this berth is safe should the wind shift southward and south-eastward, which often occurs suddenly.

Large vessels can obtain indifferent anchorage in depths of about
32 fathoms (58^m5), about 5 cables south-westward of the entrance to
20 the inlet.

Raiyikha islet is a good landmark for a vessel making Wejh.

Chart 8b.

Anchorage can be obtained by vessels with local knowledge in depths of from 17 to 20 fathoms (31^m1 to 36^m6) off the entrance to
25 Mersa Wadi al Miyāh.

Chart 3047, plan of Sherm Habbān.

Small vessels can obtain a good landlocked anchorage in depths of from 4 to 5 fathoms (7^m3 to 9^m1), sand and mud, in Sharm Habbān. A vessel making this anchorage must pass north-westward of the
30 detached reef lying in the entrance.

Chart 8b.

Vessels with local knowledge can obtain good anchorage in depths of from 12 to 30 fathoms (21^m9 to 54^m9), sheltered from north-westerly winds, near the coast in the vicinity of Sharm Munaibira.

35 *Charts 8a, 8b.*

Directions.—The following directions were given by H.M.S. *Hardinge*, in 1917:—A vessel proceeding southward along the coast, from Wejh to Sharm Habbān, should keep close inshore until the western extremity of Mardūna islet bears 178° , when she should steer
40 180° with Jabal 'Antar, astern, bearing 000° ; when a bush on the coast about the middle of the reef fringing Ras Kharāba bears 090° she should steer 143° until the northern bluff of Mersa Wadi al Miyāh bears 053° , when she should alter course to 124° , with the centre of Raiyikha islet bearing 304° , astern, which leads to a position close off
45 Sharm Habbān, whence she can proceed seaward, passing eastward and southward of Mardūna islet.

Chart 8b.

These directions lead over the reef, as charted, fringing Ras Kharāba, so caution is necessary when following them.

50 **RAS KARKAME TO RAS ABU MADD.**—Coast.—Islets and dangers.—Between Ras Karkame and Ras Abu Madd, about 68 miles south-south-eastward, the coast is much indented, and is fronted by low sandy islets and reefs, which, studded with rocks, and connected

Charts 8b, 2523.

Chart 8b.

by extensive banks, extend from 3 to 20 miles offshore. There are channels amongst these islets and reefs, which may be used by boats, but which should not be attempted by any vessel.

Only the principal islands and dangers in this area are described. 5

Hawar (Howar) islet, 5 miles south-south-westward of Sheikh Mirbat, is low and sandy.

Umm Urūma (Umuruma) island, one mile southward of Hawar islet (*Lat.* 25° 49' N., *Long.* 36° 31' E.), is low, sandy, and covered with bushes. 10

Mashābih (Masabi) island, 5½ miles south-westward of Umm Urūma island, is composed of coral, its western coast consisting of coral cliffs; the reef fringing its western side is steep-to, and there are no outlying dangers westward.

The northern extremity of the reef on which Hawar islet, Umm Urūma and Mashābih islands lie is situated about half a mile southward of Sheikh Mirbat; two other islets lie on this reef, between Umm Urūma and Mashābih islands.

Shaibara (Sheibara) island, 18 miles east-south-eastward of Mashābih island, is low, composed of sand and coral, with many bushes on it; reefs and numerous coral islets lie between Mashābih and Shaibara islands. A reef, which is steep-to, and has a depth of less than 6 feet (1^m8) over it, lies 7 miles south-westward of the north-western extremity of the latter island.

Waqāda (Woghadi) islet, about 3 miles east-south-eastward of Shaibara island, is low, and is composed of coral; a reef extends 2 miles southward and about 3½ miles north-eastward of this islet.

A channel between Shaibara island and Waqāda islet leads through a gap among the inner reefs, and thence among the reefs northward; it is used by native boats but is too narrow to be used by larger vessels. 30

Several small detached reefs, with depths of less than 6 feet (1^m8) over them, and which are steep-to, lie within about 4½ to 7 miles south-westward and from 5 to 6½ miles southward of Waqāda islet. Between these reefs and Al Hasani island, 16 miles farther south-south-eastward, are numerous rocky patches. 35

Chart 1109, plan of Hassani island.

Umm Lajj (Umm Lej), a small village on the mainland about 9 miles east-north-eastward of Al Hasani island, has a conspicuous minaret.

Al Hasani island and the adjacent coast were reported, in 1915, to lie 2 miles farther eastward and three-quarters of a mile farther southward than charted. 40

Jabal Qanz (Jebel Goz), about 8 miles east-north-eastward of Umm Lajj, is about 4,000 feet (1,219^m2) high, and table-topped (*see* view on plan); it is somewhat isolated and fairly conspicuous. Nipple hill, 2½ miles eastward of Umm Lajj, is a cone-shaped peak in the coastal range and the highest peak in the vicinity; it is rather difficult to distinguish but can be identified when in line with Jabal Qanz. 45

Al Hasani island is fringed by coral reefs; two hills, each 480 feet (146^m3) high, situated on the western side of this island, fall steeply on their western sides, but their eastern sides slope gradually to a plain. A tomb, situated on the eastern side of the island, about 4 cables northward of its south-eastern extremity, and a small white house, about 2 cables farther northward, are good marks when visible; a sandpatch near the south-eastern end of the island is conspicuous.

Chart 1109, plan of Hassani island.

A gap in the coral reef fringing the eastern side of Al Hasani island enables a boat to effect a landing on a sandy beach near the tomb mentioned above.

- 5 A reef extends about 2 miles southward of the south-western extremity of Al Hasani island (*Lat.* $24^{\circ} 58' N.$, *Long.* $37^{\circ} 03' E.$), with a conspicuous sandspit extending along its centre at its inner end; coral patches and rocks lie between the southern extremity of this reef and the south-eastern extremity of the island.
- 10 Foul ground, with numerous coral heads, through which there appears to be no channel, extends northward and north-eastward of this island and continues to the mainland.

- The sea around Al Hasani island is very clear, and, in certain lights, patches, with depths of 5 fathoms (9^m1) over them, show well; the bottom is generally visible in depths of less than 10 fathoms (18^m3).
- 15 Libāna (Libna) islet, lying about 6 cables westward of Al Hasani island, is, except on its north-eastern side, fringed by a reef, which extends about 5 cables southward of it; between Libāna islet and Al Hasani island are some rocks, with depths of less than 6 feet (1^m8) over them.

Charts 1109, plan of Hassani island; 8b.

- A reef extends about 5 miles north-north-westward of Al Hasani island and, from a position about 3 miles westward of the northern extremity of this island, a chain of reefs extends about 6 miles west-
- 25 ward; Shi'b at Tawīl (Shab at Towil), Shi'b al Wustāni (Shab al Wastani), and Shi'b as Sufīāni, the largest reefs in this chain, are awash, and the sea generally breaks over them.

Chart 1109, plan of Hassani island.

- Another reef, over which the sea breaks when there is any wind, lies
- 30 about 7 miles south-south-westward of Libāna islet.

Shi'b al Abyadh, about 3 miles south-south-eastward of Al Hasani island, dries one foot (0^m3); foul ground lies between this reef and the coast, about 4 miles southward, and rocky foul ground extends about $1\frac{1}{2}$ miles northward of it.

- 35 Umm Sihr (Umm Sahr) islet, about $3\frac{1}{2}$ miles eastward of the south-eastern extremity of Al Hasani island, is covered with sparse vegetation and, except at its eastern extremity, is fringed by a reef which extends about 6 cables southward and 5 cables north-westward of it. Near the north-western edge of this reef is a rock, 3 feet (0^m9) high, and
- 40 about 3 cables north-westward of this rock is a rocky patch, with depths of less than 6 feet (1^m8) over it; the shallow bank, on which this rocky patch lies, extends about 4 cables northward of it.

- Maliha (Mallieha) islet, 3 miles north-westward of Umm Sihr islet, is a sand cay with a little scrub on it; a reef extends about $2\frac{1}{2}$ miles
- 45 westward of it, and a small reef, which is steep-to, and has depths of less than 6 feet (1^m8) over it, lies about three-quarters of a mile south-south-westward of this islet.

- Gateway channel, between Maliha and Umm Sihr islets, is narrow, and has a least depth of $6\frac{1}{2}$ fathoms (11^m9) on the leading line; shoals,
- 50 with depths of from less than 6 feet (1^m8) to less than 5 fathoms (9^m1) over them, lie within half a mile of the track, on either side.

Shi'b al Guak, lying $2\frac{3}{4}$ miles north-north-eastward of Umm Sihr islet, dries; reefs, over which the sea sometimes breaks, but no dependence can be placed on their being visible, lie from within about a quarter

Chart 2523.

Chart 1109, plan of Hassani island.

of a mile to one mile eastward of Shi'b Guak, and a reef, with a depth of less than 6 feet (1^m8) over it, about one mile east-south-eastward of it.

Ras Abu Madd (*Lat.* 24° 50' N., *Long.* 37° 07' E.) is low and sandy. *Charts 1109, plan of Hassani island; 8b.* 5

Currents.—An east-going current, with a rate of from one to 1½ knots, has been experienced at the northern end of the channel between the off-lying reefs and the coast, about 2½ miles westward of Ras Karkame. 10

It is reported that a constant current sets northward and eastward between Ras Abu Madd and Al Hasani island.

Chart 8b.

Anchorage.—**Directions.**—Good anchorage may be obtained by small vessels with local knowledge about 5 cables south-eastward of Sheikh Mirbat, at the northern end of a channel leading southward between the reefs. 15

Good anchorage may be obtained by vessels with local knowledge on the bank eastward of Waqāda islet.

There is good anchorage for small vessels with local knowledge in the inner channel among the reefs from Ras Karkame to Waqāda islet, but no vessel should pass inside these reefs except to take up a temporary anchorage. 20

Chart 1109, plan of Hassani island.

The only known anchorage westward of Al Hasani island is southward of the north-eastern end of Shi'b at Tawil, in a depth of 14 fathoms (25^m6); a good look-out for detached rocks south-eastward of the reef is necessary when approaching this anchorage. 25

Anchorage can be obtained about 5 cables from the eastern side of Al Hasani island, in depths of about 8 fathoms (14^m6), sand and coral, fair holding ground, with the south-eastern extremity of the island bearing 227° and the small white house about 270°. 30

The only safe anchorage for large vessels near Umm Lajj is on the bank on which Shi'b al Guak lies; a good berth is in depths of from 7 to 10 fathoms (12^m8 to 18^m3), sand and coral, fair holding ground, with the conspicuous minaret at Umm Lajj, bearing 061°, distant 2½ miles. 35

Very indifferent anchorage for small vessels with local knowledge may be obtained in the small bay, on the shore of which stands Umm Lajj, about 500 feet (152^m4) from the coastal reef, in depths of from 10 to 15 fathoms (18^m3 to 27^m4); the depths westward of this anchorage increase rapidly. 40

A vessel bound for either the anchorage off Al Hasani island or for Umm Lajj should keep well outside the reefs until the summit of Al Hasani island bears between 050° and 080°; she should then shape course to pass between Shi'b as Sufāni and the reef, about 8 miles south-south-eastward, and steer to bring Nipple hill in line with the northern summit of Jabal Qanz (*see view on plan*), bearing 062°. This transit should be kept until the tomb on Al Hasani island bears 332°, when course should be altered northward for the anchorage off the eastern side of this island, or a north-easterly course steered until Nipple hill is in line with the southern summit of Jabal Qanz, bearing 064°, which leads through the fairway of Gateway channel; a vessel should then follow the track, as indicated by a pecked line on the plan, 50

Charts 8b, 2523.

Chart 1109, plan of Hassani island.

leading to the anchorage on the bank on which Shi'b al Guak (*Lat.* 24° 59' N., *Long.* 37° 11' E.) lies.

Chart 8b.

- 5 **RAS ABU MADD TO YENBO'.**—**Aspect.**—From Ras Abu Madd the coast trends 8 miles south-south-eastward to Ras Mahār; the land near the coast is, in some places, low and sandy, but higher and rocky in others. South-eastward of Ras Mahār it rises gradually to elevations of 100 or 200 feet (30^m5 or 61^m0), and forms an extensive
10 tableland; the western side of this slope is intersected by numerous water courses.

- Black hill, which is conspicuous from north-westward, is situated 10 miles eastward of Ras Abu Madd. From a position about 21 miles north-eastward of Umm Lajj minaret a range of mountains, about
15 15 miles inland, trends about 38 miles southward, varying in elevation from about 1,500 to 2,000 feet (457^m2 to 609^m6); it is broken into detached pyramidal peaks.

- From Ras Mahār the coast trends 22½ miles south-south-eastward to Ras al Lakk, then the coast, which is steep-to and composed of steep
20 coral cliffs, trends 8 miles south-eastward to Ras Barīdī, and thence about 7 miles eastward to the western entrance point of Sharm al Khaur (Sherm el Khor).

- Sugarloaf, a hill 12½ miles north-eastward of Ras al Lakk and 7 miles inland, is the western hill of any prominence as seen from south-
25 ward of Ras Barīdī; Jabal Hajīna, which has six peaks, is situated 9 miles east-south-eastward of Sugarloaf, and Cliff hill about 5 miles north-eastward of it. These hills are conspicuous from near the coast, and the high land northward of them is part of the range extending south-eastward from inland northward of Umm Lajj to the vicinity of
30 Yenbo', which is situated about 36 miles east-south-eastward of Sharm al Khaur; Round mountain, 17½ miles north-eastward of Jabal Hajīna and in the middle of this range, is the summit. *See* view facing page 291.

- Jabal Radhwe, 20½ miles east-south-eastward of Round mountain
35 and 32 miles inland, is about 6,000 feet (1,828^m8) high and is the summit of a range of table mountains. Between this range and the coast is a group of dark-coloured hills, mostly about 500 feet (152^m4) high, the valleys between them being filled with light-coloured sand from the surrounding desert. *See* view facing page 291.

- 40 Between Sharm al Khaur and Yenbo' the coast is fringed by a reef. **Off-lying dangers.**—**Beacon.**—A rocky bank, with depths of less than 6 feet (1^m8) over it, extends 4 miles south-south-eastward from a position about 3 miles westward of Ras Abu Madd.

- A rock, with a depth of less than 6 feet (1^m8) over it, was reported,
45 in 1915, to lie about 4 miles west-south-westward of this cape, and a bank, with a depth of 19 fathoms (34^m7) over it, on which lies a 2-fathom (3^m7) patch, extends 2 miles south-westward of it; the position of this patch, which is steep-to and over which the sea does not break even in a moderate swell, is approximate, and it is reported
50 to lie 7½ cables farther westward; it is only visible when close-to.

Shi'b Ma Mubārak, about 5 miles south-westward of Ras Abu Madd, has depths of less than 6 feet (1^m8) over it.

Abū Matari (*Lat.* 24° 44' N., *Long.* 37° 07' E.), the northern extremity

Chart 8b.

of which lies about half a mile south-eastward of Shi'b Ma Mubārak, has depths of less than 6 feet (1^m8) over it, and extends 6 miles south-eastward.

A bank, on which lie rocks, with depths of less than 6 feet (1^m8) over them, extends about 4 miles south-south-eastward from a position about 5½ miles west-south-westward of Ras Mahār; a rocky coral patch, the position of which is approximate, was reported, in 1915, to lie about 3 miles south-westward of the same cape, and another rock, with a depth of less than 6 feet (1^m8), about 2½ miles farther southward. 5 10

A small bank, on which lie some rocks, with depths of less than 6 feet (1^m8), is situated 11 miles north-westward of Ras al Lakk and 3½ miles offshore; a rock, with a depth of less than 6 feet (1^m8), lies 2 miles southward of this bank.

Shi'b Shu'aiba (Palinurus reef), the eastern extremity of which is situated 11 miles west-north-westward of Ras al Lakk, extends 3½ miles west-north-westward, and has depths of less than 6 feet (1^m8) over it; 2½ miles north-north-westward of the western extremity of this reef is a small reef, which dries, and 3½ miles south-westward of this latter reef lies a rock, with a depth of less than 6 feet (1^m8). Several detached rocks, with depths of less than 6 feet (1^m8), lie from about one to 3 miles south-westward of Shi'b Shu'aiba; the sea breaks over the southernmost of these rocks. 15 20

Shi'b al Qurūsh (Shab Kurush), 4 miles west-south-westward of Ras al Lakk, has a depth of less than 6 feet (1^m8) over it. 25

Schermo, lying 10 miles westward of Yenbo' and about 5 miles offshore, is an above-water rock; a masonry beacon, about 15 feet (4^m6) in height, stands 1¾ miles westward of it. A rock, with a depth of less than 6 feet (1^m8) over it, was reported, in 1937, to lie three-quarters of a mile westward of this beacon, and a rocky patch, with apparently a depth of about 3 fathoms (5^m5) over it, was reported, in 1906, to lie 2½ miles southward of the same beacon. Two rocks, which have not been closely examined, lie one and 2 miles, respectively, south-south-eastward of Schermo, and another rock 3 miles south-south-eastward of it. 30 35

Anchorage.—Vessels with local knowledge can obtain anchorage between Shi'b Ma Mubārak and Abū Matari.

There is anchorage for small vessels with local knowledge off the north-eastern and south-eastern sides of Abū Matari.

Coast.—Dangers.—The coast from Ras Abu Madd to Sharm Habbān, 5 miles south-south-eastward, is fringed by a reef. 40

Ras Mahār is about 80 feet (24^m4) high and rocky, the upper part considerably overhanging the base. A small patch of rocks extends off it, under which native boats sometimes obtain indifferent shelter from strong southerly breezes, but as these winds often shift suddenly northward, without warning, it is used only in cases of emergency. 45 A short distance south-eastward of Ras Mahār stands a similar bluff, but it is about 160 feet (48^m8) high.

Sharm Mahār, 3 miles south-south-eastward of Ras Mahār (*Lat.* 24° 43' N., *Long.* 37° 11' E.), is small, but affords unusual facility of egress. Moderately high table lands closely approach the coast in this vicinity; a deep valley in them, forming a conspicuous gap, marks the inlet. This valley is extensive and spreads out to a considerable width as it advances into the interior; the lower part is

Chart 2523.

Chart 8b.

covered with bushes and along it, about one mile inland, are a few palm trees. The valley appears like the dry bed of a river; the upper part of the hills on either side overhang considerably and many
5 large fragments from them lie scattered in the valley.

Chart 8b, with plan of Sharm Hassey.

Sharm Hasi (Sherm Hassey), 3 miles south-south-eastward of Sharm Mahār, is fringed by reefs which, on the eastern side of this inlet, extend to as far as 3 cables offshore. The northern half of the inlet
10 is shallow and encumbered with reefs.

Chart 8b.

A bank, on which lie many rocks and reefs, extends, from a position $2\frac{1}{2}$ miles south-westward of Sharm Hasi, to Ras al Lakk; its outer edge lies from $2\frac{1}{2}$ to $4\frac{1}{2}$ miles offshore.

15 The coast between Ras al Lakk and Ras Baridi is free from dangers; Ras Baridi is low and sandy.

Sharm al Khaur is encumbered with islets and rocks.

A bank, on which lie several rocks, with depths of less than 6 feet (1^m8) over them, extends about 11 miles south-eastward and 8 miles
20 eastward of the western entrance point of Sharm al Khaur; the depths over this bank appear to be very uneven and it should be avoided. A rock, with a depth of less than 6 feet (1^m8), the existence of which is doubtful, is charted $5\frac{1}{2}$ miles southward of Ras Jarbū' (Jerbó'a), the eastern entrance point of Sharm al Khaur, and a similar rock, the
25 position of which is approximate, lies about 5 miles south-south-eastward of that cape.

Between Ras Jarbū' and Yenbo' the coast is low, sandy, and fringed by a reef, through which there is a gap leading into Sharm Yenbo', about 14 miles east-south-eastward of Ras Jarbū'. Close within the
30 entrance to this inlet a branch extends eastward, and $1\frac{1}{2}$ miles farther in a branch extends north-westward.

Anchorage.—There is good anchorage for small vessels with local knowledge in Sharm Mahār in depths of 7 fathoms (12^m8), sand, sheltered from north-westerly winds.

35 *Chart 8b, plan of Sherm Hassey.*

Anchorage in the outer part of Sharm Hasi is not recommended as the channel is contracted and the bottom foul, but there is good anchorage for small vessels in the inner part of this inlet.

Chart 8b.

40 Indifferent anchorage for small vessels with local knowledge may be found on the bank extending from south-westward of Sharm Hasi to Ras al Lakk; there is good anchorage for such vessels on the eastern side of the large reef near the northern end of this bank.

Anchorage can be obtained by small vessels with local knowledge in
45 Sharm al Khaur, westward of the reef fringing Ras Jarbū' (*Lat. $24^{\circ} 17' N.$, Long. $37^{\circ} 42' E.$*) and southward of the islets extending from the western side of this inlet; anchorage has also been obtained within these islets, but any attempt to enter without previous examination or local knowledge would be dangerous.

50 Sharm Yenbo' is the best harbour on the coast between Ras Muhammad and Jidda, and affords good anchorage to small vessels with local knowledge.

Chart 8b, with plan of Yenbo.

Yenbo'.—Yenbo' is the port of Medina, and is fronted by a reef,

Charts 8b, 2523.

Chart 8b, with plan of Yenbo.

on which lies a sandy islet, covered with bushes ; this islet, which lies $6\frac{1}{2}$ cables from the north-western side of the port, has the ruins of a house at its north-western end and of a tomb at its south-eastern end. The northern side of the port is low, sandy, and destitute of vegetation, and is fringed, in places, by a coral reef, which extends to as far as 4 cables offshore. 5

The high houses and mosque in the town can be seen from a distance of about 13 miles ; a radio mast is situated in the south-western part of the town, and there is a conspicuous black chimney about three-quarters of a cable east-south-eastward of the radio mast. 10

Entrance.—Dangers.—Beacons.—The entrance to the port of Yenbo' is between the western edge of the reef fronting this port and the south-eastern edge of the reef fringing the north-western side of the entrance ; in 1944, on each side of the entrance, standing close within the edge of the reefs, was a white masonry beacon, about 10 feet (3^m0) in height, but these beacons are not to be relied upon. The fairway of the entrance is little more than one cable wide. 15

A detached coral patch, which dries, and some rocks, with depths of less than 6 feet (1^m8) over them, close north-eastward of this patch, lies about $2\frac{1}{2}$ cables south-south-westward of the beacon on the south-eastern side of the entrance. 20

Middle reef, a detached reef which dries one foot (0^m3), lies on the north-western side of the channel, about $4\frac{1}{2}$ cables north-eastward of the beacon on the north-western side of the entrance and $1\frac{1}{2}$ cables offshore ; it was marked, in 1944, on its southern side by a white masonry beacon, about 10 feet (3^m0) in height, but the existence of this beacon cannot be depended upon. 25

Anchorage.—Mooring buoy.—The best berth is south-eastward of the quay, which is situated north-eastward of the conspicuous black chimney, in a depth of about 5 fathoms (9^m1), grey sand, fairly good holding ground ; owing to the prevailing north-westerly winds vessels are recommended to anchor slightly north-north-westward of the position of the anchor on the chart, turn the vessel's head to west-north-westward, and lay out a stern anchor east-south-eastward. 30 35

Small vessels can obtain anchorage west-south-westward of Middle reef but, as space is limited, should moor bow and stern.

Small vessels can also obtain anchorage, in depths of about $3\frac{1}{2}$ fathoms (6^m9), $5\frac{1}{2}$ cables east-south-eastward of the quay.

A mooring buoy, privately owned, lies $1\frac{1}{2}$ cables east-south-eastward of the quay. 40

Directions.—No vessel without local knowledge should attempt to enter this port (*Lat. $24^{\circ} 05' N.$, Long. $38^{\circ} 03' E.$*).

A vessel approaching Yenbo' from westward should pass not less than $2\frac{1}{2}$ cables northward of Schermo, taking care to avoid the rocks in its vicinity. The islet fronting the entrance can be identified soon after rounding Schermo, and the entrance to the port steered for with this islet on an easterly bearing ; a north-easterly course leads through the entrance channel. The reef on the south-eastern side of the entrance is almost steep-to and should be kept aboard until about 2 cables eastward of Middle reef, when a bearing of the old battery at the eastern end of the town leads to the anchorage. 45 50

The reefs are easily seen after 0900 when the sun is sufficiently high.

Town.—The town of Yenbo', with a population of about 6,000,

Chart 2523.

Chart 8b, with plan of Yenbo.

stands on the northern side of the port ; its houses are roughly built of limestone and coral, the crumbling of the latter giving it a dilapidated appearance ; the wall which formerly surrounded it is in ruins. The
 5 inhabitants are chiefly Arabs of the Juheinah tribe. There is a telegraph to Medina.

Dhows and lighters are available.

Chart 8b.

YENBO' TO RAS AL ABYADH.—**Aspect.**—The coast, from
 10 $1\frac{1}{2}$ miles south-eastward of the town of Yenbo', trends about 42 miles south-eastward to Ras al Abyadh, and is fringed by a reef ; it is low, marshy, and thickly covered with mangroves. The country inland appears to consist of fine light sand, which has filled the valleys and then blown up on the south-western sides of the numerous hills which
 15 rise to sharp conical peaks ; though several of these hills are from 500 to 1,000 feet (152^m4 to 304^m8) high the sand reaches the summit of the highest, in many cases leaving the upper parts of the black peaks discernible.

Off-lying dangers.—**Beacon.**—Shi'b al Sab'a, lying from $14\frac{1}{2}$
 20 miles south-south-westward to 22 miles southward of the town of Yenbo', is a group of reefs, over which the sea breaks, and is steep-to ; the southermost of these dangers, is a rock, the position of which is approximate, and has a depth of less than 6 feet (1^m8) over it.

Mansi, or Thetis reef, 27 miles southward of Yenbo' and 22 miles
 25 offshore, dries from 2 to 3 feet (0^m6 to 0^m9), and is steep-to ; a white masonry beacon, about 15 feet (4^m6) in height, stands on the south-eastern side of this reef.

Shi'b al Sufiāni, lying $12\frac{1}{2}$ miles east-south-eastward. of Mansi beacon, dries, and is steep-to.

30 A rocky bank, the northern extremity of which is situated about 19 miles east-north-eastward of Mansi beacon, extends 18 miles southward, and is steep-to ; on this bank, the eastern side of which lies from about $2\frac{1}{2}$ to 4 miles offshore, are many reefs.

A bank, on which there is a reef, with a depth of less than 6 feet
 35 (1^m8), lies 2 miles westward of Ras al Abyadh, and is steep-to.

Anchorage.—Indifferent anchorage may be found amongst the reefs on the bank lying 15 miles eastward of Mansi beacon (*Lat.* $23^\circ 39' N.$, *Long.* $38^\circ 02' E.$).

Coast.—**Dangers.**—**Beacon.**—There are occasional breaks in the
 40 reef fringing this stretch of the coast, and native craft obtain shelter within these gaps.

A bank, on which lie many rocky patches, extends south-eastward from close south-westward of Yenbo' to west-south-westward of Ras Mu'jiz (Majiz), a promontory about 25 miles south-eastward ; the
 45 outer edge of this bank lies as far as $10\frac{1}{2}$ miles offshore. Qabriya (Kabriya) reef, lying near the north-western end of this bank, has depths of less than 6 feet (1^m8) over it ; rocky patches, over which the sea breaks, lie about three-quarters of a mile north-westward and northward and 2 miles east-north-eastward of this reef ; Qabriya
 50 reef and its outlying patches are steep-to.

Shi'b Green, lying on the western edge of this bank, about 13 miles southward of Yenbo', is marked at its south-eastern edge by a white masonry beacon, about 15 feet (4^m6) in height.

Chart 2523.

Chart 8b.

There is an inshore channel, running north-westward, between the coast and the north-eastern sides of the reefs lying near the centre and south-eastern end of this bank, but care must be taken to avoid a reef, with depths of less than 6 feet (1^m8) over it, lying about half a mile from the coastal reef, 9 miles south-eastward of Yenbo'; a similar reef, about 5 miles farther east-south-eastward, lies about half a mile offshore. 5

Lying from within about 2 to 3½ miles south-eastward of Ras Mu'jiz and within a short distance of the coastal reef is a group of rocks, 10 with depths of less than 6 feet (1^m8) over it.

Sharm Bureika, about 13 miles south-south-eastward of Ras Mu'jiz, has an entrance, 50 yards (45^m7) wide, between rocks on either side, which rise steeply; the head of this inlet dries out for a distance of about 1½ miles. Northward of the head of the inlet are the ruins of 15 a fort and a little farther northward the ruins of a town.

Ras al Abyadh is low and sandy.

Anchorage.—A bight in the coastal reef southward of Ras Mu'jiz affords anchorage to small vessels with local knowledge.

Sharm Bureika affords anchorage to small vessels with local knowledge in depths of from 3 to 6 fathoms (5^m5 to 11^m0). 20

RAS AL ABYADH TO SHARM RĀBIGH.—**Aspect.**—The coast, from eastward of Ras al Abyadh, trends 37 miles south-south-eastward to Sharm al Kharrar and is fringed by a reef; this reef also fringes the coast for a distance of 1½ miles southward of Sharm al 25 Kharrar.

From the latter spot the coast trends 11½ miles south-eastward to Sharm Rābigh (Sherm Rabegh), being fringed by a reef for about the last 4 miles of this stretch.

Jabal Subh, the summit of a range which extends 24 miles south-eastward from a position 79 miles south-south-eastward of Jabal Radhwe, is situated about 15 miles inland, and is the highest land between Yenbo' and Jidda; Jabal Beid lies about 15 miles south-south-eastward of Jabal Subh, and the Asses Ears, about 6 miles eastward of Jabal Beid (*Lat.* 23° 06' N., *Long.* 39° 10' E.). 35

Off-lying dangers.—**Beacon.**—Kharrar reefs, with depths of less than 6 feet (1^m8) over them, lie on a bank which extends about 17 miles south-south-eastward from a position 27 miles south-south-eastward of Ras al Abyadh and the outer edge of which is as far as 11 miles offshore; between the coast and this bank is a channel from 1½ to 40 2½ miles wide.

Shi'b al Khamsa, the northern extremity of which is situated about 20 miles westward of the northern entrance point of Sharm Rābigh, extends 3½ miles southward, and is steep-to; a small reef lies about 2 miles eastward of its northern end. 45

Shi'b al Abyadh, which is steep-to, lies about 10 miles westward of Sharm Rābigh, and is marked by a white conical beacon, surmounted by a staff, about 20 feet (6^m1) in height.

Chart 926, plan of Sherm Rabegh.

Tanta rock, lying about 3 miles westward of Sharm Rābigh, is above 50 water.

Chart 8b.

Coast.—**Dangers.**—Ghubbat al Raiyis (Ghubbet el Reis), on the

Charts 8b, 2523.

Chart 8b.

north-eastern side of Ras al Abyadh, known locally as Mersa Sabir, has an islet lying near its centre; it is encumbered with reefs, and local knowledge is essential for a vessel to enter this bay.

- 5 Between the eastern entrance point of Ghubbat al Raiyis and Ras Mastūra, about 32 miles south-south-eastward, a bank, on which lie numerous rocks and shoals, extends to as far as 7 miles offshore.

Anchorage.—Ghubbat al Raiyis affords safe anchorage to small vessels with local knowledge.

10 *Chart 926, plan of Sherm Rabegh.*

Sharm Rābigh.—**Dangers.**—**Beacons.**—Sharm Rābigh is entered between Ras al Auliya, about 20 miles south-south-eastward of Ras Mastūra, and Ras Abu Dibsa, $3\frac{1}{2}$ cables farther south-south-eastward; Ras al Auliya is the south-eastern extremity of a low ridge of hard sand,

- 15 and on it are two stone huts.

The entrance points are bordered by reefs, which extend $5\frac{1}{2}$ cables west-south-westward of Ras al Auliya and $1\frac{1}{2}$ cables westward and northward of Ras Abu Dibsa; Qad ash Sheikh, the reef on the north-western side of the entrance, is marked by a white stone beacon, sur-

- 20 mounted by a staff with a barrel, on which is a St. Andrew's cross.

The harbour is encumbered with reefs and mudflats, through which a channel, with a least width of $2\frac{1}{2}$ cables, leads north-eastward from the entrance; a shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m1) over it, lies on the north-western side of the fairway, about $1\frac{1}{2}$ cables east-north-

- 25 eastward of Ras al Auliya.

Qad al Wustāni (Kad el Wastani), on the south-eastern side of the fairway, about 7 cables north-eastward of Ras Abu Dibsa, dries, and is marked near its western edge by a staff, surmounted by a globe; Qad al Juwāni, close north-eastward of Qad al Wustāni, dries, and is

- 30 also marked at its western edge by a staff, surmounted by a globe.

Qad az Zawal, lying on the north-western side of the fairway, about $4\frac{1}{2}$ cables north-eastward of Ras al Auliya, is awash.

The ruins of a pier extend from the north-western side of the harbour, about $4\frac{1}{2}$ cables north-eastward of Qad az Zawal (*Lat.* $22^\circ 45' N.$,

- 35 *Long.* $38^\circ 59' E.$).

Caution.—The beacons, described above, cannot be relied upon.

Anchorage.—**Directions.**—Sharm Rābigh affords good anchorage in depths of from 6 to 12 fathoms (11^m0 to 21^m9), sand and coral, completely sheltered.

- 40 *Charts 926, plan of Sherm Rabegh; 8b.*

A vessel approaching from south-westward should keep the Asses Ears bearing 047° (*see* view on chart 8b), which leads south-eastward of Shi'b al Abyadh and north-westward of Tanta rock. After passing northward of this rock a vessel should steer a south-easterly course

- 45 until off the entrance to the harbour, when she should alter course north-eastward for the desired anchorage; depths of 6 fathoms (11^m0) will be obtained about 4 cables from the Custom house, which consists of three mud-brick buildings, $1\frac{1}{2}$ miles north-eastward of Ras al Auliya.

Chart 926, plan of Sherm Rabegh.

- 50 **Town.**—Rābigh is a group of hamlets, standing in extensive date groves, about 2 miles northward of the head of the harbour.

Vessels before proceeding to Sharm Rābigh should try to make arrangements for labour and lighters by telegraph to Jidda. There are usually one or two dhows here prepared to act as lighters, their

Chart 926, plan of Sherm Rabegh.

crews working the cargo. There is a stock of benzine, and limited quantities of fresh provisions can be procured.

Charts 8b, 8c.

SHARM RĀBIGH TO RAS QAĦĀZ.—Aspect.—From Sharm 5
Rābigh the coast trends about 28 miles southward to Ras Makhlūq
(Malak) and is backed by a low sandy desert.

Jabal Rahab, a conspicuous double peaked hill with precipitous sides, about 18 miles inland, is the summit of a range extending about 15 miles south-south-eastward from a position about 25 miles southward 10
of the Asses Ears.

Chart 8c.

From Ras Makhlūq the coast trends about 21 miles south-south-westward to Ras Hatība and from thence the coast, which is low and sandy, trends 20 miles south-south-eastward to Sharm Bihār (Sherm 15
Ubhur); the high land backing it presents no conspicuous features.

North Sister, a peak about 12 miles east-north-eastward of the entrance to Sharm Bihār, and South Sister, a peak about 3 miles south-south-eastward of North Sister, are conspicuous and are the northernmost mountains near the coast in this vicinity. See view 20
facing page 306.

From Sharm Bihār the coast trends 11 miles southward to Ras Qahāz (Gahaz); the last 4 miles of this stretch are fringed by a reef.

Charts 8b, 8c.

Off-lying islets and dangers.—Beacons.—A bank, on which lie 25
numerous reefs, extends about 27 miles southward from a position about one mile northward of Tanta rock; the western edge of this bank is steep-to.

Abu Sahim, about 3 miles south-south-westward of Tanta rock (*Lat.* 22° 44' N., *Long.* 38° 55' E.), is a reef, with several coral heads. 30

Chart 8c.

Shi'b Nazar, lying at the south-western end of this bank, has depths of less than 6 feet (1^m8) over it; a rock awash, the position of which is approximate, lies near the south-eastern edge of this bank, about 12 miles westward of Ras Makhlūq, and another rock awash about 35
1½ miles farther southward. A rocky patch is charted 11½ miles west-south-westward of Ras Makhlūq, but its existence is doubtful as it has been unsuccessfully searched for.

Shi'b Nazar and the adjacent coast and hills, though themselves relatively correct, are charted about 3 miles too far south and 5 miles 40
too far east.

From a position about 8 miles north-westward of Ras Hatība a bank, on which lie several reefs, over some of which the sea breaks, extends about 29 miles southward; the western edge of this bank, which is steep-to, lies as much as about 14 miles offshore. There is 45
a deep channel between the eastern edge of the bank and the coast.

Abu Madafi', lying near the north-western extremity of this bank, has depths of less than 6 feet (1^m8) over it; Qita' Dukais (Kat ah Dukeis), the northern extremity of which is situated about 6 miles westward of Ras Hatība, extends about 5 miles south-south-eastward, 50
and has depths of less than 6 feet (1^m8) over it; Abu Farāmish, about 12 miles south-westward of the same cape, has depths of less than 6 feet (1^m8) over it, and is marked by a cairn, about 5 feet (1^m5) in height;

Charts 8b, 2523.

Chart 8c.

Eliza shoals, known locally as Shi'b al Kabir, with depths of less than 6 feet (1^m8) over them, lie near the south-western side of this bank ; Shi'b al Kabir (Shab el Kebir), about one mile southward of Eliza 5 shoals, is marked on its western side by a beacon, consisting of a post, standing on a solid white triangular base, surmounted by a black ball, about 15 feet (4^m6) in height.

Charts 8b, 8c.

Anchorage.—There are anchorages for small vessels with local 10 knowledge amongst the reefs lying on the bank which extends about 27 miles southward from the vicinity of Tanta rock.

Small vessels with local knowledge can anchor south-westward of the coral heads on Abu Sahim.

Chart 8c.

15 Indifferent anchorage can be obtained by small vessels with local knowledge off the north-eastern side of Shi'b al Nazar, but a rock, with a depth of less than 6 feet (1^m8) over it, lies about half a mile eastward of the middle of this reef.

Small vessels with local knowledge can obtain good anchorage, 20 sheltered from north-westerly winds, off the south-eastern side of Abu Madafi'.

Small vessels with local knowledge can also obtain good anchorage off the middle of the eastern side of Abu Farāmish.

Charts 8b, 8c.

25 **Coast.—Dangers.—Inner channel.**—Between the coast and the eastern edge of the bank extending about 27 miles southward from the vicinity of Tanta rock (*Lat.* 22° 44' N., *Long.* 38° 55' E.) is a deep channel ; Gitah al Kerah, a rocky shoal, with a depth of less than 6 feet (1^m8) over it, lies in the middle of this channel, 3½ miles west- 30 north-westward of Ras Khurma, a promontory about 5½ miles northward of Ras Makhlūq.

A rock, with a depth of less than 6 feet (1^m8), lies in the entrance to Marsa Dhunaib (Mersa Dhenab), about 10 miles south-south-eastward of Sharm Rābiḥ.

35 *Chart 8c.*

A rocky bank, on which lie some islets and numerous reefs, borders the coast from a position 3½ miles northward of Ras Khurma to a position about 11 miles southward of Ras Hatiba ; there are several channels amongst these reefs, available for small vessels with local 40 knowledge.

Ras Khurma, known locally as Ras Zanabga, and Ras Makhlūq are both low and sandy, the coast between these points being fringed by reefs ; a reef extends about 4 miles southward of Ras Khurma.

Entrance islet, lying 2½ miles westward of Ras Makhlūq, is fringed 45 by a reef ; a rock, with a depth of less than 6 feet (1^m8), over which the sea seldom breaks, lies 1½ miles north-north-westward of this islet and, as the area of discoloured water over it is small, is not visible except under favourable conditions ; slightly discoloured patches extend about one mile north-westward of this rock but no depth of 50 less than 9 fathoms (16^m5) has been found over them.

There is a small well-sheltered bay on the south-eastern side of Ras Khurma ; the entrance, 1½ cables wide, with depths of 17 fathoms (31^m1), lies between the southern extremity of the reef extending southward of Ras Khurma and the reef extending northward of Entrance 55 islet.

Chart 2523.

Chart 8c.

Marsa Umm Misk, on the south-eastern side of Ras Makhliq, is encumbered with rocks and shoals; the villages of Al Qadhima and Thuwāl (Thwell) stand on the shores of this inlet.

Harāmil islet, $7\frac{1}{2}$ miles west-south-westward of Ras Makhliq and $4\frac{1}{2}$ miles offshore, lies on the rocky bank mentioned above, and is merely an accumulation of drift on the upper ridge of a reef; it is 11 feet (3^m4) high and covered with bushes.

'Aīqa (Aikah) islet, $2\frac{1}{2}$ miles north-north-eastward of Ras Hatība and three-quarters of a mile offshore, is sandy; a detached rock, with depths of less than 6 feet (1^m8) over it, lies about 6 miles west-north-westward of it.

About 5 miles north-eastward of Ras Hatība is the entrance to two inlets; both these inlets and their approaches are encumbered with reefs.

Southward of Ras Hatība, between the coast and the eastern edge of the bank described on page 303, is an inshore channel, which can be used if the sun is in a favourable position, but it is not recommended, except in case of emergency, for those who have no experience in navigating amongst coral reefs.

It is from one to 3 miles wide and both sides are steep-to. Should night come on before a vessel is through, she may bear a little westward and anchor as convenient under the lee of any of the reefs, bearing in mind that the reefs which afford sheltered anchorage terminate about 9 miles west-north-westward of Sharm Bihār (*Lat. $21^\circ 42' N.$, Long. $39^\circ 06' E.$*); the reefs on the bank south-south-eastward of this do not afford good shelter from north-westerly winds.

The northern entrance to this channel is close southward of Abu Madafi', whence an east-south-easterly course leads into the inner channel.

Caution.—The positions of the reefs in the vicinity of Harāmil islet are approximate only.

Charts 8b, 8c.

Anchorage.—Marsa Dhunaib affords good anchorage to small vessels with local knowledge in depths of from 7 to 10 fathoms (12^m8 to 18^m3).

Chart 8c.

There is anchorage for small vessels with local knowledge north-north-eastward of Entrance islet. A vessel making this anchorage should close the reef, which is visible and well defined, extending southward of Ras Khurma, taking care to avoid the rock $1\frac{1}{2}$ miles north-north-westward of Entrance islet, then rounding the southern extremity of this reef anchor in depths of from 7 to 13 fathoms (12^m8 to 23^m8); the reefs bordering the anchorage are clearly visible.

There are several anchorages, available for small vessels with local knowledge, off the stretch of coast lying between Ras Makhliq and Ras Hatība, but they are difficult to approach owing to the off-lying dangers.

Sharm Bihār, from the head of which a marsh extends several miles inland, affords landlocked anchorage to small vessels with local knowledge; the best berth is on the north-western side of the inlet, about 5 cables within its entrance and one cable within a rocky point which should be rounded as closely as the bank extending off it admits; with the exception of this bank, the extremity of which can be easily seen, the inlet is free from dangers.

Chart 2523.

Charts 2599, 8c.

JIDDA AND APPROACHES.—Jidda is so well sheltered by lines of reefs that the sea within them is comparatively smooth whatever the force and direction of the wind. The outlying reefs form three
 6 nearly parallel lines, about 10 miles long, northward and southward, between Ras Qahāz, the northern entrance point of Jidda bay, and Ras al Aswad, the northern extremity of a low sandy projection, 9½ miles southward. There are also many outlying patches, the channels between which are navigated by native pilots; only the
 10 recognised tracks passing through what are called the gateways, are described in this volume, as a stranger can take them with safety, but no one without local knowledge should attempt to use the other channels.

The town of Jidda is situated on the north-eastern side of the bay.
 15 **Aspect.**—The landmarks by which the position of Jidda can be identified, before the town is visible, are not easily distinguished by a stranger. The mountains which lie eastward of the plain extending inland from the town are so rugged and uneven that it is difficult to identify the peaks. The town can generally be seen from outside the
 20 reefs when near the latitude of Jidda (*Lat. 21° 29' N., Long. 39° 11' E.*). See view on chart No. 2599.

Chart 8c.

Jabal Umm Arar, situated in the range northward of Jidda, 7 miles west-south-westward of South Sister and about the same distance
 25 inland, shows as the westernmost hill when approaching from southward, and is the termination of some spurs running westward from the inland mountains.

Jabal Yamaniya (Jebel Yemeniyah), about 11 miles south-eastward of Jabal Umm Arar, is conical and conspicuous, and can easily be
 30 identified when the town is on easterly or north-easterly bearings, as it is then the nearest conspicuous cone behind the houses; the jagged appearance of the double-peaked hill southward of it helps to identify it. See view facing this page.

Jabal al Moya, about 7 miles south-south-westward of Jabal Yaman-
 35 iya, is a black, rounded hill, at the southern end of the range nearest the coast, and may be identified by its colour and by being at the end of a line of white sandhills.

Jabal Sanam, about 4½ miles east-south-eastward of Jabal al Moya, has a flat summit, with a small but conspicuous nipple; it presents the
 40 same appearance from all directions.

Jabal Hadda, 10 miles eastward of Jabal Yamaniya, is saddle-shaped, with a double peak; it is the highest and most conspicuous of the nearer mountains and, as the loftier range behind Mecca is seldom visible, it is generally the highest land to be seen.

45 See view facing this page.

Chart 2599.

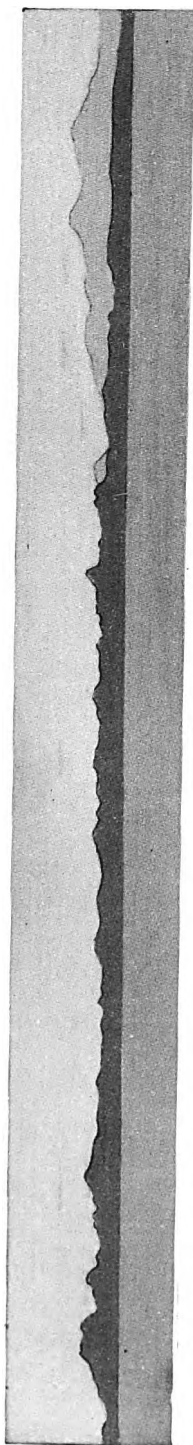
Caution.—A good berth should be given to all reefs in the vicinity of Jidda, as this area is but imperfectly known.

Great care should at all times be taken when making this port owing
 50 to the strong and variable currents in its approach.

Neither beacons nor buoys can be depended upon, as they are frequently washed away.

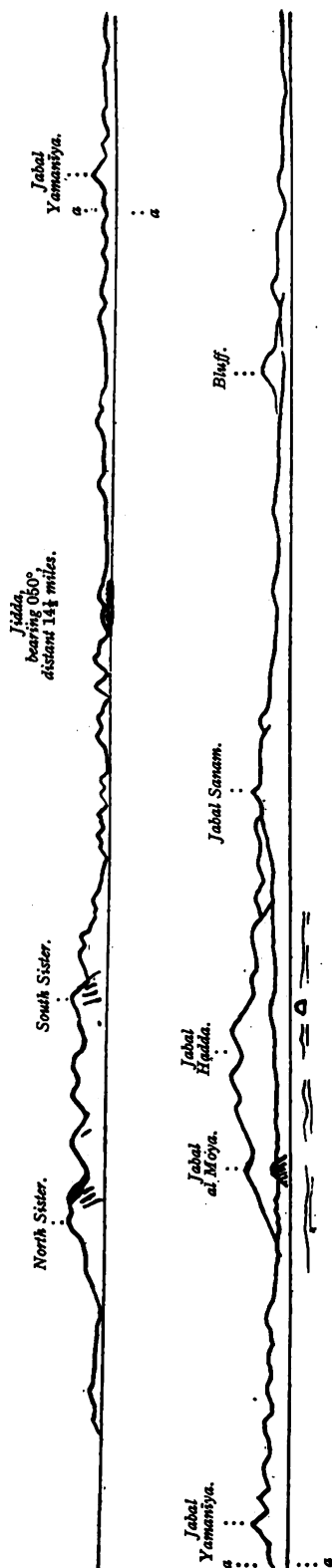
Pilots.—Pilots for Jidda may be obtained by giving 24 hours notice by radio to the ship's agent. Vessels from northward or

Charts 8c, 2523.



Jabal Yamaniya.
Jidda, bearing 074°,
distant 13 miles.

Jabal Yamaniya.
(Original dated 1925.)



View, in two parts, of south-western approach to Jidda.
(Original dated 1883.)

Chart 2599.

southward are boarded by pilots, 5 miles westward and $8\frac{1}{2}$ miles south-westward, respectively, of the town.

Sea level.—The summer low water level, which is the chart datum, is about 2 feet (0^m6) below that of winter. In summer, when northerly winds prevail, many of the banks dry, there being about 3 feet (0^m9) less water than during the southerly winds which prevail in the southern part of the Red sea in winter; in January, 1880, during a northerly gale of five days' duration, the level of the water fell about 5 feet (1^m5).

Winds and weather.—The weather at Jidda (*Lat.* $21^\circ 29' N.$, *Long.* $39^\circ 11' E.$) in January, 1896, was usually fine and dry, with very few clouds, or a little haze, during northerly winds, but always cloudy and damp during southerly and easterly winds; the wind was generally north-north-easterly in the early morning to north-westerly at night, force from one to 5. The natives say that when the wind remains from northward during the night a strong northerly wind may be expected the next day, and when the wind inclines eastward in the early morning it will be light and the weather fine.

In December, the prevailing wind was NNE. to NW., force one to 4, with occasional winds between SW. and SE., force one to 5, lasting three days at a time. Easterly and westerly winds were rare and light. The average annual rainfall is limited to a few showers which fall chiefly in December and January. Rain fell on two days in December, 1895, with south-westerly winds.

See Meteorological tables, page 56.

Outlying dangers.—Beacon.—Clearing marks.—Rocky bank, on which lie seven known shoals, is the name given to the western part of the bank fronting Jidda; these shoals are separated from the inner line of reefs by a deep channel, 2 miles wide, and free from dangers.

Charts 2599, 8c.

Abu al Yahūd, the north-easternmost of these shoals, lies $4\frac{1}{2}$ miles south-westward of Ras Qahāz, and has a least depth of 5 fathoms (9^m1) over it; Jabal Yamaniya, bearing 080° and well open northward of Jidda, leads about 5 cables northward of this shoal.

Chart 2599.

'Irq as Sunniya (Erg ar Suniya), about 4 cables west-south-westward of Abu al Yahūd, has a depth of $3\frac{1}{2}$ fathoms (5^m9) over it; Abu al Khudhar (Abu-l-Khodar), $4\frac{1}{2}$ cables south-westward of 'Irq as Sunniya, has a depth of 3 fathoms (5^m5) over it, and Al Fauqāni (Al Fokani), close south-westward of Abu al Khudhar, a depth of $2\frac{1}{2}$ fathoms (4^m6); Al Kharūba al Bahriya (Al Khruba Baharia), about $6\frac{1}{2}$ cables west-south-westward of Al Fauqāni, has a least depth of 6 fathoms (11^m0) over it.

Charts 2599, 8c.

Al Wustāni (Al Wastani), lying 6 miles south-south-westward of Ras Qahāz, has a depth of less than 6 feet (1^m8) over it; Abu Nalha (Abu Nakla), the southernmost shoal on Rocky bank, about 3 cables south-south-eastward of Al Wustāni, has a least depth of $1\frac{1}{2}$ fathoms (2^m7) over it. The sea breaks over these two shoals when there is any swell.

Jabal Yamaniya, bearing 068° and well open southward of Jidda, leads about one mile southward of Abu Nalha.

Chart 2599.

Mismāri reef, lying 6 miles west-south-westward of Ras al Aswad, dries, and is steep-to on its western side, over which the sea breaks;

Charts 8c, 2523.

Chart 2599.

bank, with a least depth of 7 fathoms (12^m8) over it, 2½ cables south-westward of this reef, extends about 2 cables southward.

Maruwas, lying about 9 cables south-south-westward of Assamdiya, extends about 1½ cables southward, and has depths of less than 6 feet (1^m8) over it; it is the southernmost danger in this chain of reefs and the sea does not usually break over it. A bank, with depths of from 6 to 10 fathoms (11^m0 to 18^m3), extends about 2 cables north-north-westward of Maruwas and half a cable south-south-eastward of it.

A bank, with a least depth of 12 fathoms (21^m9), lies about 1½ miles south-westward of Maruwas.

About one mile within the chain of reefs described above, a chain of rocks and reefs extends from Ras Qahāz to Ras al Aswad; a third line of reefs, about three-quarters of a mile farther eastward, is more continuous than the other two.

Falahiyā (Fellahiyat) reef, lying in the second chain of reefs, with its northern extremity about 1½ miles north-eastward of Qaham beacon, partly dries, and extends about 1½ miles southward; the gaps through this reef are the gateways; a 5½-fathom (10^m1) patch lies in Middle gateway, about 1½ miles east-north-eastward of Qaham beacon. 'Irq al Falāhiyāt (Erg el Fellahiyat), about one cable eastward of this 5½-fathom (10^m1) patch, has depths of less than 6 feet (1^m8) over it, but is not always visible; it is marked on its north-western side by a black conical buoy.

Chart 2599, with plan of Inner anchorage.

Dangers in Inner anchorage.—Buoys.—Beacons.—The Inner anchorage, which lies between the coastal reef fronting the town, on the eastern side, and Shi'b Ras al Radham and Barri (Burri), on the western side, is encumbered with reefs and shoals, and only the principal ones bordering the fairway are described below; Shi'b Ras al Radham extends, from a position about 1½ miles south-eastward of Ras Qahāz, about 1½ miles southward, and has a conspicuous white wooden cable hut, standing on piles, at its south-eastern extremity; Barri, a reef which dries, extends 1½ miles southward from a position close westward of the south-western side of Shi'b al Radham; Ras as Sunni, the southern extremity of Barri, is marked at its southern edge by No. 2 red can buoy.

Bahri, a reef which dries, lying on the northern side of the entrance to the Inner anchorage, about 1½ cables westward of the southern end of Barri, extends 6½ cables in a northerly and southerly direction, and is marked at its southern end by a square concrete beacon, about 6 feet (1^m8) in height, surmounted by a staff and vane; in 1930, a wreck on the western side of Bahri was conspicuous and visible from a considerable distance, before the town could be seen, or even Jabal Yamaniya (*Lat.* 21° 30' N., *Long.* 39° 19' E.). A shoal, with a depth of 2½ fathoms (5^m0) over it, lies about 2 cables east-north-eastward of Bahri beacon.

Abu Hārith (Abu Harit), about one cable south-south-eastward of Bahri, dries, and extends about 1½ miles southward; it is marked at its northern end by a black beacon, on a concrete base, surmounted by a rectangle and a ball, about 15 feet (4^m6) in height.

On both sides of the fairway of the Inner anchorage the banks shoal gradually with many tongues of coral; with a good light the bottom

Chart 2599, with plan of Inner anchorage.

can be seen at depths of from 3 to 4 fathoms (5^m5 to 7^m3), also the reefs.

- ‘Irq al ‘Alam (Erg el Allem), with a least depth of 1½ fathoms (2^m7)
 5 over it, lies about 1½ cables southward of Ras as Sunni, and is marked at its north-eastern end by No. 3 black drum-shaped buoy. Between this shoal and the north-eastern side of Abu Hārith is a shoal, with a depth of 2 fathoms (3^m7) over it, and about three-quarters of a cable southward of ‘Irq al ‘Alam, is a rock with a depth of less than 6 feet
 10 (1^m8) over it.

- A submerged wreck, which is marked by a green spar beacon, surmounted by a ball, 19 feet (5^m8) in height, lies about 4½ cables east-north-eastward of Abu Hārith beacon. A rock, with a depth of less than 6 feet (1^m8) over it, lies 2½ cables south-eastward of this spar
 15 beacon, and is marked on its northern side by No. 5 black drum-shaped buoy; close north-westward of this rock is a shoal, with a least depth of 3½ fathoms (5^m9).

- Walad al Ghirsh (Welled el Ghersh), a rocky shoal lying on the eastern side of the fairway, about 1½ cables north-eastward of the green
 20 spar beacon, has depths of less than 6 feet (1^m8) over it; a shoal, with a least depth of 3¾ fathoms (6^m9), extends about three-quarters of a cable west-south-westward of this rock, and a chain of shoals, with depths of less than 6 feet (1^m8), about 2 cables northward of Walad al Ghirsh.

- Qita’ al Mayet Saghir (Gitah el Mayet Seghir), which is awash, lies about 5 cables north-north-eastward of the same spar beacon and, from the northern end of this reef a spit, with a least depth of a quarter of a fathom (0^m5) over it, extends 2 cables northward; a 3-fathom (5^m5) patch lies 1½ cables north-westward of Qita’ al Mayet Saghir.
 30 A bank, with depths of less than 3 fathoms (5^m5), extends to as far as 1½ cables from the eastern side of Barri; there are some detached shoals, with a least depth of 1½ fathoms (2^m3) over them, just outside this bank.

- About 7 cables northward of Ras as Sunni a spit, with a depth of
 35 2½ fathoms (4^m6) at its south-eastern edge, extends south-south-eastward from the north-eastern side of Barri to within about one cable of the northern extremity of the spit extending northward of Qita’ al Mayet Saghir; it is marked at its south-eastern edge by No. 4 red can buoy, and the eastern side of the fairway at this point is marked by
 40 No. 7 black conical buoy.

Farther northward there are many other shoals and reefs, the positions of which can best be seen on the chart, which can only be avoided by sounding and a good look out.

- Eastward of the cable hut on the south-eastern end of Shi’b Ras al
 45 Radham (*Lat. 21° 29’ N., Long. 39° 09’ E.*) the eastern and western sides of the fairway are marked by No. 9 black conical buoy and No. 6 red can buoy, respectively.

- Northward of the cable hut the eastern and western sides of the channel are marked by odd-numbered black drum-shaped buoys,
 50 numbered 11 to 19, and by even-numbered red can buoys, numbered 8 to 14, respectively; their positions can best be seen on the chart.

Charts 2599, 8c.

Currents.—In November and December, 1876, a constant north-

Charts 8c, 2523.

Charts 2599, 8c.

going current was experienced outside the reefs, but the currents inside the reefs were weak and irregular.

In February, 1916, north-north-west-going currents, with rates of a half and one knot, were experienced outside the reefs, between 5 Yenbo' and Jidda.

In September, 1929, a north-going current was experienced when approaching Jidda, although a northerly wind was blowing at the time.

In May, 1932, an east-going current, with a rate of $2\frac{1}{4}$ knots, was 10 experienced when approaching Jidda; a northerly wind was blowing at the time.

In June, 1936, with a northerly wind, force 3, a south-going current, with a rate of one knot, was experienced when approaching Mismāri 15 reef on an easterly course.

*Chart 2599.***Channels through reefs.—Conspicuous objects.—Beacons.—**

Al Hariq (El Harig), the fairway generally used for entering Jidda harbour, lies between Jahān and Qaham. Qaham, Shi'b Jidda, Umm al Qat', and Assamdiya, over which the sea breaks, are always visible, 20 and lie on the eastern side of the fairway to Jidda from southward. Northward of Al Hariq the sea breaks over all the outlying dangers.

Four small square white houses stand on Jazīrat Abu Sa'd (Abu Sa'ad), an above-water sandbank, $3\frac{1}{4}$ miles east-south-eastward of Qaham beacon; similar but smaller houses stand on Jazīrat al Wasta, 25 about $1\frac{1}{2}$ miles south-south-westward of Jazīrat Abu Sa'd; these objects are conspicuous and are useful marks for a vessel approaching the gateways.

Charts 2599, 8c.

The middle of the town in line with Jabal Yamaniya, bearing 074° , 30 leads in the fairway over Rocky bank between Al Kharūba al Bahriya and Al Wustāni, and into Al Hariq in a depth of, apparently, not less than 11 fathoms (20^m1).

North gateway, the entrance to which is situated $1\frac{1}{4}$ miles north-eastward of Qaham beacon, is a narrow channel, with a least depth of 35 9 fathoms (16^m5) in the fairway; Abu Hārith beacon in line with Jabal al Moya (*Lat. $21^\circ 24' N.$, Long. $39^\circ 18' E.$*), bearing 112° , leads through the fairway of this channel (*see view*).



Abu Hārith beacon in line with Jabal al Moya, bearing 112° .

(Original dated 1906.)

Middle gateway, about $2\frac{1}{4}$ cables southward of North gateway, is about one cable wide and is the passage most usually taken; the 40 southern extremity of the town wall in line with Jabal Yamaniya, bearing 072° , leads, from eastward of Rocky bank, northward of Qaham, towards Middle gateway.

Charts 8c, 2523.

Chart 2599.

South gateway, southward of Falahiyā reef, is very narrow, and is not recommended for those without local knowledge ; there are several sunken rocks on its southern side.

- 5 North entrance, in which there is a least depth of 4 fathoms (7^m3) in the fairway, about 1½ miles northward of North gateway, is occasionally used by vessels of moderate draught bound for the Outer anchorage. It is entered between Ras al Makhbat, the south-western extremity of Shi'b al Jabal (Shab el Jebel), which dries, on the northern side, and Shi'b Umm al Khalkhala and Butela al Mecca, on the southern side ;
- 10 Shi'b Umm al Khalkhala, which dries, lies with its northern extremity about 5 cables west-south-westward of Ras al Makhbat, and extends about 7 cables southward ; Butela al Mecca, which also dries, lies about 2 cables eastward of Shi'b Umm al Khalkhala. Shi'b Umm
- 15 al Khalkhala must be given a good berth, as a rock, with a depth of less than 6 feet (1^m8) over it, lies 1½ cables north-westward of its northern extremity ; after passing northward of Butela al Mecca the track passes northward and eastward of Tawila (Towila), a reef, lying with its northern extremity 3 cables east-south-eastward of Butela
- 20 al Mecca, and extending about 6 cables southward. Southward and south-eastward of Tawila are several rocks and shoals, the positions of which can best be seen on the chart. in the northern approach to the Outer anchorage.

Chart 2599, plan of Inner anchorage.

- 25 Inner gateway lies between Bahri and Abu Hārith ; the passage is 180 yards (164^m6) wide and free from dangers, but as the reefs are not steep-to neither side should be approached too closely.

Charts 2599, with plan of Inner anchorage ; 8c.

- The second white house southward of the town in line with Jabal
- 30 Yamaniya (Lat. 21° 30' N., Long. 39° 19' E.), bearing 071°, leads through the middle of Inner gateway ; this house is not conspicuous, and appears from the leading line as the first white house southward of the town, owing to the first house standing close to the town wall.

Chart 2599, plan of Inner anchorage.

- 35 Boat passage, leading from the northern part of Inner anchorage eastward to the town, lies between the reefs, and is so shallow that when the water level is low it is difficult to avoid grounding. It is marked by stone beacons at the salient points of the reefs on either side. The entrance beacon, 8 feet (2^m4) high, is white, surmounted by
- 40 a white cage and wind vane, and the beacons on either side are about 3 feet (0^m9) high, and are painted white.

- Submarine telegraph cable.**—A submarine telegraph cable is laid from the cable hut on Shi'b Ras al Radham through the boat passage to the town. Vessels are cautioned against anchoring in this
- 45 vicinity. The direction of this cable is indicated by a pecked line on the chart.

Chart 2599.

- Outer anchorage.**—Large vessels, or those not proceeding into the Inner anchorage, anchor in the outer anchorage between the
- 50 second and third lines of reefs north-eastward of Middle gateway, in depths of from 6 to 19 fathoms (11^m0 to 34^m7) ; here they are sheltered, but the bottom is foul ground and coral, and several anchors have been lost in this vicinity. There is no better anchorage at a reasonable distance from the town.

Charts 8c, 2523.

Chart 2599, with plan of Inner anchorage.

Inner anchorage.—Piers.—Beacons.—The best berth in this anchorage, for a vessel drawing 18 feet (5^m5), is in its northern part, north-westward of Boat passage; the anchorage here is wider and has depths of from 4 to 6 fathoms (7^m3 to 11^m0), sand, but it is sometimes crowded with shipping. The approach from southward is through a very narrow channel, between shallow banks on either side; a least depth of 5½ fathoms (9^m6) can be carried in this approach. 5

A conspicuous stone hut stands on the coastal reef 9½ cables east-north-eastward of the conspicuous cable hut on Shi'b Ras al Radham, 10 and a pier, which connects it with the mainland, projects 65 yards (59^m4) west-south-westward of it.

About 6½ cables north-westward of this pier another pier, on the head of which stands a conspicuous 15-ton crane, extends north-eastward to the shore, and carries a pipe line; a mooring buoy and pile dolphin are situated about 400 feet (121^m9) south-westward and 500 feet (152^m4) westward, respectively, of the head of the latter pier. 15

Larger vessels can obtain good anchorage in depths of from 11 to 13 fathoms (20^m1 to 23^m8) 4 cables north-north-eastward of the green spar beacon marking the sunken wreck at the southern end of Inner anchorage; there is also good anchorage in depths of 14 fathoms (25^m6) about half a cable south-eastward of this beacon. The latter anchorage is available for vessels of a maximum length of 500 feet (152^m4) and of a draught not exceeding 25 feet (7^m6). 25

In most other parts of the anchorage it is necessary to moor, especially during the pilgrim season when the anchorage (*Lat.* 21° 29' N., *Long.* 39° 09' E.) is crowded.

The holding ground is bad and vessels are liable to drag, especially during southerly winds. 30

Oil tankers, when discharging oil at the northern pier, should anchor off the head of the pier with their sterns secured to the mooring buoy. To assist them in picking up this berth, leading beacons have been established on the detached reef close northward of Shi'b Ras al Radham; the front beacon, standing on the southern extremity of the reef, consists of a white stone structure, surmounted by a triangle, point down, 18 feet (5^m5) in height; the rear beacon, about three-quarters of a cable north-westward of the front beacon, is also of white stone, surmounted by a diamond and 19 feet (5^m8) in height; the beacons in line bear 321°. 40

The usual landing place is the quarantine pier, about 7½ cables south-eastward of the pier, on which stands the conspicuous stone hut. During the summer, while the water level is low, small boats can use the latter pier, but in winter it is awash.

Charts 2599, 8c. 45

Directions.—Beacon.—The mountains in the vicinity of Jidda can usually be clearly distinguished from about half an hour before to half an hour after sunrise from a distance of 30 to 40 miles westward of Jidda and a reliable fix obtained. From this distance, Jabal Hadda is liable to be mistaken for North Sister; Jabal Hadda should therefore be identified by its proximity to Round mountain, 7½ miles east-north-eastward, which has a conspicuous rounded summit.

Jabal Yamaniya will be seen on nearer approach; when bearing between 045° and 090° it is conspicuous.

Charts 8c, 2523.

Chart 2599, with plan of Inner anchorage.

bearing $014\frac{1}{2}^{\circ}$; this leads, in a least depth of 4 fathoms (7^m3), clear of dangers to the anchorage north-westward of Boat passage.

Local craft occasionally proceed to Inner anchorage from North entrance; after passing northward and eastward of Tawila the track leads between Barri and Shi'b Hammāma, a reef about one cable northward, and thence northward along the western side of Shi'b Ras al Radham, taking care to avoid a shoal, with a depth of 3 fathoms (5^m5) on it, lying $1\frac{1}{2}$ cables west-north-westward of the northern extremity of Barri. A shoal, with a depth of 2 fathoms (3^m7) over it, lies in the fairway westward of the northern end of Shi'b Ras al Radham.

Town.—Jidda is the port of Mecca, which latter town lies about 55 miles by road eastward of the former. It is one of the most considerable places in the Red sea, and is in Hejaz. It stands on a low sandy plain, which extends to the base of a range of hills from 5 to 10 miles inland; farther in the interior the country becomes mountainous.

The town, with its white minarets, has an imposing appearance from seaward; it is enclosed by a wall, with small towers at intervals. There is only one entrance to the town on the harbour side, situated towards the southern end of the town (*Lat. $21^{\circ} 29' N.$, Long. $39^{\circ} 11' E.$*).

The Medina, Mecca, and Cherif gates, on the northern, eastern, and southern sides of the town, respectively, are normally always open.

Europeans and non-Moslems are permitted to pass through the gates at all times.

The population was estimated, in 1942, to be about 30,000, but a very large number of pilgrims is reported to pass through annually; it is owing to the pilgrim traffic that Jidda owes its prosperity as a port.

Customs regulations strictly prohibit the landing of alcohol, but tobacco can be landed on payment of duty.

Climate.—The climate, though hot, is not unhealthy, the sea-breeze to some extent counteracting the insanitary condition of the streets.

Communications.—There is regular steamer communication with Suez and Aden, and all parts of the world.

Jidda is connected with the general telegraph system; there is also communication by telegraph with Mecca and by telephone with Mecca and Taif.

Port facilities.—There are no stocks of coal available for bunkering, but there is usually a small stock of Government coal maintained for the distiller.

Small quantities of fresh provisions of inferior quality can be obtained. A condenser, erected in 1928, is capable of distilling 250 tons of water a day, and supplies may be procured by giving due notice; delivery is made in tank dhows.

About 150 dhows and several small motor launches are available for loading and discharging cargo; each dhow can carry about 12 tons of cargo at normal water level, but in the summer the depths in the boat passage limit the draught to $2\frac{1}{2}$ feet (0^m8). The landing place, 100 yards (91^m4) in length, has a depth of 4 feet (1^m2) alongside.

Quarantine.—Vessels are boarded by the Quarantine officers on arrival. All vessels from Indian ports are subject to quarantine observation for ten days, and those from Java for five days.

Charts 8c, 2523.

Chart 2599, with plan of Inner anchorage.

The sanitary or quarantine station is situated on Jazīrat Abu Sa'd, Jazīrat al Wasta, and Jazīrat 'Ali, about one mile south-south-westward of Jazīrat al Wasta.

- ⁵ On Jazīrat Abu Sa'd (*Lat. 21° 26' N., Long. 39° 10' E.*) are several masonry buildings; a high iron framework structure stands on the coastal reef eastward of this sandbank.

Charts 8c, 2523.

CHAPTER VIII

EASTERN SIDE OF THE RED SEA FROM JIDDA TO MOKHA

Chart 2523.

GENERAL REMARKS.—Between Ras al Aswad, the southern entrance point of Jidda bay, and Ras al Bayādh, the southern entrance point of Kamarān bay, about 420 miles south-south-eastward, the coast is bordered by reefs and banks; from westward of Al Lith, about 100 miles south-eastward of Raṣ al Aswad, southward to Ras al Bayādh, these reefs and banks extend as far as 60 miles offshore. Farasān bank, which embraces this latter area, is the principal western boundary of the Inner channel southward of Al Lith; it is encumbered with imperfectly charted reefs, so that it is dangerous to cross through-out most of its length. 5 10

Local weather.—See page 39.

Chart 8c.

RAS AL ASWAD TO AL LITH.—**Aspect.**—Between Ras al Aswad and Al Lith the coast is low and is fringed by a reef which, in places, extends a little over one mile offshore. Many detached reefs off-lie this stretch of the coast. 15

Jabal Abu Shauk, about 33 miles south-eastward of Ras al Aswad and 10 miles inland, is a small two-knobbed hill.

Jabal Sa'diyya, about 36 miles east-south-eastward of Jabal Abu Shauk, is a conspicuous peak on the northern and highest part of a range which extends about 40 miles south-south-eastward; a still more conspicuous peak close eastward of it helps to identify it.

Charts 321, 8c.

Sugarloaf, a mountain about 12 miles south-south-westward of Jabal Sa'diyya, has three small peaks. 25

Tower hill, about 6 miles southward of Sugarloaf, near the western extremity of a branch of the range, mentioned above, which extends westward towards the coast, has a conspicuous sharp peak resembling a tower, but from south-south-eastward the summit has the appearance of a rugged double peak and of being much larger than when seen from westward; the high land south-westward shows as two round hills. 30
Jabal Sa'da is a peak about $5\frac{1}{2}$ miles east-south-eastward of Tower hill. Jabal Ghala (*Lat. 20° 25' N., Long. 40° 09' E.*) lies about 5 miles east-north-eastward of Jabal Sa'da, and 2 miles south-south-westward of it is a somewhat lower peak; both peaks are double and from 35

Charts 2523, 748b.

M

Chart 321, 8c.

westward appear to be the summits of two sloping wedge-shaped mountains. See views on charts.

Chart 321.

- 5 Jabal ar Rahmān (Jebel Hahman) is situated about $8\frac{1}{2}$ miles eastward of Jabal Ghala, and $4\frac{1}{2}$ miles southward of it is a lower mountain.

- Jabal Bujala, about 15 miles east-north-eastward of Jabal ar Rahmān, has two wedge-shaped peaks. Jabal Bani Sa'd (Jebel Beni Zeid), about 5 miles north-north-eastward of Jabal Bujala, is a large isolated mass; North Notch, the north-eastern peak, falls precipitously on its northern side; the next peak south-westward is rounded, and the next two peaks south-westward are both conical. These mountains are backed by the main escarpment, but it is not always visible.
- 15 *Charts 321, 8c, 2523.*

- The main escarpment trends about 45 miles southward from near Taif, about 47 miles north-north-eastward of North Notch, to a point where, masked by a mass of mountains, 8,000 feet (2,438^m4) high, it turns south-eastward; here the summit of Jabal 'Unsar (Jebel el Unsa), 15 miles eastward of North Notch, shows over the main escarpment.

- The main range, the lofty escarpment of which, from 6,000 to 7,000 feet (1,828 to 2,133^m6) high, forms the principal watershed of the country, is from 40 to 50 miles inland, and falls abruptly to an intricate mass of hills and valleys, which are seldom clearly visible from seaward. This broken country is bounded on its south-western side by the lesser coastal ranges, from 2,000 to 4,000 feet (609^m6 to 1,219^m2) high, with numerous well-defined summits; the lesser coastal ranges fall steeply to At Tihāma, which extends thence to the coast, and its plain is broken in places by conspicuous low hills, often visible from seaward, when the lesser coastal ranges are obscured by the haze which is prevalent in summer and autumn.

Chart 321.

- Jabal Shifā (Jebel Shefa), about $2\frac{1}{2}$ miles southward of Jabal 'Unsar, has two pyramidal peaks presenting, on northerly bearings, a well defined notch; there is a break in the cliff just eastward of it and thence the escarpment is more or less even to Jabal Hajra, 26 miles south-eastward.

- Jabal Ibrāhīm, the highest mountain in this district, lying between Jabal Shifā and Jabal Hajra, is a red granite mass on the edge of the escarpment, with two peaks divided by a notch; its summit is a sharp granite pinnacle. The northern side of Jabal Hajra falls steeply in two steps. Jabal Surra is the name given to the escarpment between Jabal Hajra and a point about 24 miles south-south-eastward, where it turns sharply eastward.

- Jabal Dauqa (Jebel Dauka) is a conspicuous group of pinnacles southward of, and isolated from, the southern end of Jabal Surra; its summit is a sharp peak, 7,276 feet (2,217^m7) high; another peak, 7,192 feet (2,192^m1) high, is a truncated cone with a peak resembling a chimney on it, and a pair of pinnacles, the higher of which is 5,975 feet (1,821^m2) high, stands on the northern end of the range.

Of the lesser coastal ranges Jabal Umm Kurha (*Lat.* $20^{\circ} 27' N.$, *Long.* $40^{\circ} 46' E.$), 11 miles eastward of Jabal Bujala, is a remarkable mass of red granite domes and pinnacles; the range is seldom clearly

Charts 8c, 2523, 748b.

Chart 321.

visible from seaward, but the summit can sometimes be seen in the morning, when the lower hills are obscured by haze.

Jabal 'Umar (Jebel Omar), 5 miles south-south-westward of Jabal Umm Kurha, has two conspicuous summits, 4,295 and 4,166 feet (1,309^m1 and 1,269^m8) high, like a pig's ears, and several lower peaks; it falls steeply southward.

South Notch, about 5 miles southward of Jabal 'Umar, forms the north-western end of Jabal 'Afāf, a steep red granite range, which extends 5 miles south-eastward.

Al Aswadain (El Iswidein), 2½ miles south-south-eastward of Jabal 'Afāf, is a group of three dark mountains, which appears on most bearings like a saddle between two peaks.

Jabal Muzaira (Jebel Muzeira) stands in the middle of a break in the range between Al Aswadain and Jabal Nakhra, 12½ miles south-eastward; Jabal Thaiyil (Jebel Theyil), 8 miles north-eastward of Al Aswadain, has a bold triple-peaked summit, of which the western peak, a pinnacle of smooth granite, is visible through the break; Jabal Bani Salīm (Jebel Beni Selim), 2½ miles southward of Jabal Nakhra, extends about 5½ miles southward, and has a conspicuous spike on the southern shoulder of its summit.

South-eastward of Jabal Bani Salīm is a break in the mountain range, filled with many low hills. Jabal Nadesh, 11½ miles east-north-eastward of Jabal Bani Salīm, is visible through this break; its lower summit is 4,440 feet (1,353^m3) high, but there is a much higher peak, with a detached pillar rock, further inland, the position and elevation of which have not been determined.

Jabal Shadi (Jebel Sheda), about 16 miles east-south-eastward of Jabal Bani Salīm, consists of two rather flat-topped ridges.

The hills in At Tihāma are useful for navigation, being more often visible than the higher mountains inland.

Jabal al Jabbāra (Jebel el Jabara), 17 miles north-eastward of Al Līth, is triple peaked, and is conspicuous. A range extends between it and a conspicuous isolated rocky peak, 549 feet (167^m3) high, 10½ miles southward; in this range are two sharp peaks, Jabal Hafyān and Jabal Saifa (Jebel Seifat).

A range of limestone hills lies between Jabal Saifa and Jabal Shairān, a limestone hill, 10 miles south-eastward.

For a distance of about 9 miles south-eastward of Jabal Shairān the plain is dotted with several isolated knolls and hills; Hasat Hibwa (Haset Hibwa), about 2 miles south-south-westward of Jabal Shairān, is a beehive-shaped knoll; Jabal Asfar, about 4 miles south-eastward of Hasat Hibwa, can be identified by two mounds at its base, one on its northern side and the other on its southern side; Sugarloaf, about 5 miles east-south-eastward of Jabal Asfar, is a sharp cone, with a lower mound northward of it; Twin Cones, about 4 miles northward of Sugarloaf, has a conspicuous low double peak.

Chart 2599.

Off-lying dangers.—Mismāri reef (*Lat.* 21° 20' N., *Long.* 39° 02' E.) and 'Irq al Ghurāb, about 6 miles west-south-westward and 9 miles south-westward, respectively, of Ras al Aswad, were described on pages 307-308.

Chart 8c.

A bank, the northern extremity of which is situated 1½ miles south-

Charts 8c, 2523.

Chart 8c.

ward of 'Irq al Ghurāb, extends parallel to the coast for a distance of about 25 miles ; the channel between it and the coast can be used in daylight, keeping about one mile from the coastal reef, which is visible, but fixes by bearings cannot be relied upon. On this bank are several reefs.

Kobbein reef, lying on the north-eastern side of this bank, has depths of less than 6 feet (1^m8) over it, and about half a mile southward of it is a similar reef ; Al Kasr Shāmiya (Alkasr Shamiya) reef, about 10 1½ miles farther southward, also has a depth of less than 6 feet (1^m8) over it ; Al Kasr Yamaniya (Alkasr al Yemaniya) reef, with depths of less than 6 feet (1^m8), lies near the western side of the bank, about 11 miles from its northern extremity. The sea breaks over these reefs.

15 Qita' Teffa (Katat teffa), lying near the eastern edge of this bank, about 7 miles from its southern end, has depths of less than 6 feet (1^m8) over it. Two detached rocks, with depths of less than 6 feet (1^m8), lie on the bank, within one to 2½ miles south-eastward of Qita' Teffa ; the position of the north-western rock, which was reported in 20 1923, is approximate.

Qita' Kidan (Katah Kidan), lying on the south-western side of this bank, is a group of reefs over which the sea breaks ; a shoal, with a depth of 3 fathoms (5^m5) over it, was reported, in 1906, to lie about one mile north-westward of this group.

25 Vessels are advised not to cross this bank between Al Kās Yamaniya reef and Qita' Teffa as this area has not been examined.

Abu Shaub reefs, the northern extremity of which is situated about 35 miles south-south-eastward of Ras al Aswad, are the northern of a line of reefs extending about 14 miles south-south-eastward ; Tawil Raghwan (Towil Raghwan reef) is the south-easternmost of this line of reefs, all of which have depths of less than 6 feet (1^m8) over them. Vessels should not attempt to pass through them.

A detached reef, with depths of less than 6 feet (1^m8) over it, lies about one mile eastward of Tawil Raghwan.

35 A patch of discoloured water, which was reported, in 1916, to have a depth of 10 fathoms (18^m3) over it, lies 10 miles south-eastward of Tawil Raghwan and about 6 miles offshore ; it has not been examined and there may be less water.

A reef, the position of which is approximate, lies about 5 miles southward of this patch, and a rock awash is situated 2½ miles farther southward.

Qadd Humais (Kad Homeis), about 50 miles westward of Al Lith and 16 miles offshore, consists of a series of low sandy islets lying on two reefs, which are steep-to.

45 *Charts 321, 8c.*

A shoal, with a depth of 7 fathoms (12^m8), mud, lies about 22 miles east-south-eastward of Qadd Humais (*Lat. 20° 15' N., Long. 39° 25' E.*) and 11 miles offshore.

Chart 2599.

50 **Coast.—Dangers.**—The coastal reef extends about 1½ miles westward of Ras al Aswad ; Ghurāb islet (Jezirat Ghorab) lies on this reef, 1½ miles south-westward of the northern extremity of this projection.

Chart 8c.

Sumaima (Someima) is a bight in the coastal reef, about 7 miles

Charts 8c, 2523.

Chart 8c.

south-south-eastward of Ras al Aswad; the northern entrance is encumbered with discoloured patches and should be used with caution. The southern entrance, about 4 cables wide, is indicated by a rock, about 3 feet (0^m9) high, lying on the reef on the southern side of the entrance; isolated patches, over which the sea does not break, lie off the reefs on each side of this entrance, and it is therefore necessary to keep in mid-channel. 5

Sarūm (Serom) is situated about 6 miles south-south-eastward of Sumaima; two detached rocks, each with a depth of less than 6 feet (1^m8) over it, lie about one mile offshore, one mile west-north-westward and one mile south-south-westward, of Sarūm, respectively. 10

The coast between Sarūm and Damrūr (Dumrur), about 12 miles south-south-eastward, consists of a chain of lagoons, separated from each other by sandspits and islets, and fronted by a coral reef with depths of from one to 2 feet (0^m3 to 0^m6) over it; the lagoon at Sarūm appears to be deeper than the others and fair sized dhows have been seen in it one mile within the coastal reef. 15

Kidan is a bight in the coastal reef, about 4 miles south-south-eastward of Damrūr. 20

Abu Shauk, a bight about 3½ miles south-eastward of Kidan, has a very narrow entrance between the reefs which extend off it; it is easy to identify and thus forms the best mark for making the open sea between Qita' Kidan and Abu Shauk reefs.

There is a deep channel between the coastal reef and Abu Shauk reefs, but a detached rock, with a depth of less than 6 feet (1^m8) over it, lies 5 cables offshore about 9 miles south-south-eastward of Abu Shauk, and a reef, with depths of less than 6 feet (1^m8), lies 1½ miles offshore 3½ miles farther south-south-eastward; a similar reef lies 2½ miles offshore 16 miles south-south-eastward of Abu Shauk, and a detached rock, with a depth of less than 6 feet (1^m8), about 5 cables offshore north-eastward of this reef. 25 30

Charts 321, 8c.

Abu Dūda, about 22 miles south-eastward of Abu Shauk, is an inlet about which nothing is known; Qita' Abu Dūda, lying about 3 miles westward of the northern entrance point of this inlet and 2 miles offshore, has a depth of less than 6 feet (1^m8) over it.

Chart 321.

A reef, with depths of less than 6 feet (1^m8) over it, lies about 6 miles offshore 10 miles southward of Abu Dūda; Shaj'a (Shejah) reef, 2½ miles south-eastward of this reef, consists of two separate reefs. 40

Makram (Mahram) is situated 12 miles south-eastward of Abu Dūda; some scattered rocks off-lie the coast in this vicinity.

An extensive reef, with depths of less than 6 feet (1^m8) over it, extends about 2 miles southward and 5 miles eastward from a position 4 miles south-south-westward of Makram (*Lat.* 20° 25' N., *Long.* 39° 40' E.); a rock, the position of which is approximate, was reported, in 1915, to lie about three-quarters of a mile southward of the southern side of this reef, and some other rocks, with depths of less than 6 feet (1^m8), the positions of which can best be seen on the chart, lie between the eastern end of this reef and the coast. 45 50

Harkat (Mirkat), about 8 miles south-eastward of Makram, can be identified by a conspicuous tomb on a hill.

A patch, with a depth of 10 fathoms (18^m3) over it, the position of

Chart 321.

which is approximate, lies about 4 miles southward of Harkat ; two rocks, each with depths of less than 6 feet (1^m8), lie 6½ miles south-south-westward and 3½ miles southward of Harkat.

- 5 Shi'b at Tawaman, lying about 9 miles south-south-eastward of Harkat and 5½ miles offshore, dries, is steep-to, and has a sand cay on it ; between this reef and the coast is an area of foul ground, on which lies a small reef which dries.

Chart 8c.

- 10 **Anchorage.**—Sumaima, which is open to north-westerly but moderately sheltered from southerly winds, affords anchorage to small vessels with local knowledge ; anchorage can be obtained in a depth of 17 fathoms (31^m1), mud, with the above-water rock (page 321), bearing 214°, distant 4 cables, and with Jabal Sanam a little open north-west-ward of Jabal Hadda.

Kidan affords anchorage to small vessels with local knowledge in a depth of 4 fathoms (7^m3), moderately sheltered from westerly winds but open southward.

- 20 Abu Shauk affords good anchorage to small vessels with local knowledge in depths of 6 fathoms (11^m0), with Jabal Abu Shauk bearing about 073°.

Kuff, a small bight in the coastal reef, about 6 miles south-eastward of Abu Shauk, affords anchorage to small vessels with local knowledge in depths of 11 fathoms (20^m1), rock ; this anchorage is unsheltered.

Chart 321.

Makram is the first known anchorage near the coast southward of Kuff, but on account of the scattered rocks in this vicinity it is better to anchor westward of the rocks.

- 30 There is anchorage in depths of from 15 to 16 fathoms (27^m4 to 29^m3) close southward of the rocks off-lying Harkat ; these rocks afford a little shelter from westerly winds.

Chart 8c, plan of Lith.

- 35 **Al Lith and approaches.**—The town of Al Lith stands on an islet in a wādi, which is dry except after rain. The buildings consist of low mud houses or conical straw huts ; the mosque has a low reddish tower of two stories, but is not conspicuous from seaward. There is a dense grove of palms close northward of the town.

Chart 321.

- 40 **Islands and dangers.**—Shi'b at Tawaman, lying in the western approach to Al Lith, is described above.

Ash Sharifa (El Sherifa), a bight in the coast north-westward of Al Lith, is fronted by Qishrān island (Jezirat Kishran), with Da'ama island (*Lat.* 20° 10' N., *Long.* 40° 12' E.) close east-south-eastward.

- 45 Shi'b al Jiffin (Shab el Jeffin) extending, for about 10½ miles, parallel to Qishrān island, from which it is separated by a narrow channel, has depths of less than 6 feet (1^m8) over it ; Sumār islet lies near the western end of this reef.

- 50 Two patches, with estimated depths of 8 and 12 fathoms (14^m6 and 21^m9) over them, lie off the southern side of the western approach to Al Lith, about 5 and 12 miles, respectively, east-south-eastward of Shi'b at Tawaman.

Qita' al Qursh (Katat el Gursh), lying on the southern side of the western approach, about 10 miles westward of Al Lith, dries ; numer-

Chart 321.

ous rocks and shoals, the positions of which can best be seen on the chart, lie south-eastward of this reef.

Qita' al Jabal (Katat el Jebel), a reef over which the sea breaks in moderate weather, lies about $3\frac{1}{2}$ miles south-south-westward of Qita' al Qursh; there are patches of discoloured water in its vicinity.

Two detached rocks, each with a depth of less than 6 feet (1^m8) over it, lies on the northern side of the western approach, about 2 miles north-north-eastward of Qita' al Qursh.

Charts 8c, plan of Lith; 321.

10

Shi'b Habil, which is steep-to, and the north-western extremity of which is situated about 2 miles southward of Da'ama island, extends about $2\frac{1}{2}$ miles south-south-eastward, and has depths of less than 6 feet (1^m8) over it; the north-western and south-eastern ends of this reef are well defined. Shi'b Hujair (Shab Hujair), lying about $1\frac{1}{2}$ cables eastward of the north-eastern side of Shi'b Habil, has depths of less than 6 feet (1^m8) over it.

Chart 8c, plan of Lith.

Halhala islet, $2\frac{1}{2}$ cables southward of the south-eastern end of Da'ama island, is low, sandy, and covered with scrub; it is fringed by a reef which extends 2 cables westward of it. A shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, lies $3\frac{1}{2}$ cables westward of this islet.

Between Halhala islet and Shi'b Hujair are several shoals, with a least depth of 5 fathoms (9^m1), the positions of which can best be seen on the plan.

25

Three detached reefs, which dry, front the entrance to Marsa Ibrāhīm, about 5 cables east-south-eastward of Halhala islet; southward of these reefs are some shoals, with a least depth of 2 fathoms (3^m7), the positions of which can best be seen on the plan.

Chart 321.

30

Anchorages.—There is anchorage about $1\frac{1}{2}$ miles offshore, in depths of from 25 to 47 fathoms (45^m7 to 86^m0), south-westward of Marsa Qishrān (Mersa Kishran), the western entrance to Ash Sharifa.

Sumār anchorage, with depths of about 6 fathoms (11^m0), mud, lies in the bight formed by the reef on the south-eastern side of the entrance to Marsa Qishrān, between it and Sumār islet.

35

Charts 8c, plan of Lith; 321.

Ash Sharifa is only available for small vessels with local knowledge; the bottom is not visible in depths of one fathom (1^m8). There is a bar, with a least depth of 3 fathoms (5^m5) over it, in the entrance to Marsa Qishran (*Lat. 20° 15' N., Long. 39° 55' E.*); but on either side of the fairway are rocks, with depths of only a few feet over them.

Chart 8c, plan of Lith.

Large vessels can anchor in the outer road, in depths of 11 fathoms (20^m1), sand and coral, with the conspicuous palm on the coast south-westward of Al Līth bearing 095° and the centre of Halhala islet 005° ; there is no shelter from north-westerly winds at this anchorage.

45

Marsa Ibrāhīm, on the north-western side of which stand a few buildings, some in ruins, affords anchorage to small vessels in depths of $4\frac{1}{2}$ fathoms (8^m7), good holding ground, with about 150 yards (137^m2) swinging room, northward of the two eastern detached reefs fronting this bight; it is well protected by these three reefs and by the coastal reef extending north-westward from the northern entrance point. The best landing place is on the north-western side of the entrance.

50

Charts 321, 8c, 2523.

Charts 8c, plan of Lith ; 321.

Directions.—The track from westward to Al Lith is indicated by a pecked line on chart 321 ; it passes southward of Shi'b at Tawaman and northward of Qita' al Qursh, but the land is often hidden by haze,
5 so a look-out from aloft is necessary. When the conspicuous palm west-south-westward of Al Lith bears 095° a vessel should steer for it to the outer anchorage.

A vessel entering Marsa Ibrāhim must steer in mid-channel between the two western of the three detached reefs ; with the sun in a favour-
10 able position the reefs will be clearly visible.

There is a boat channel, which can only be used by small boats in smooth water, between the two eastern of the three detached reefs.

Charts 8c, 8d.

INNER CHANNEL.—**General remarks.**—There is an inshore
15 channel from Al Lith to Kamarān bay ; the recommended tracks are shown by pecked lines on the charts. This channel, which is encumbered with many dangers, is from about half a mile to 12 miles wide ; there are good anchorages.

Throughout the channels the charts are, in many places, inaccurate
20 and incomplete, and hazy weather frequently renders navigation difficult ; sometimes the red or green discolorations caused by algæ add to the difficulty by making the reef discolorations less noticeable.

In winter and early spring the level of the water is higher than in summer, and this difference, though small, has a considerable effect
25 on the visibility of the reefs. Usually, in winter all the reefs, which dry in summer, are covered, and show as light green coloured water. Generally, most shoals in the deep parts of the channels are near the 20-fathom (36^m6) line, which should be approached with caution.

Visibility from January to May is very good and mountains, distant
30 50 miles or more, show well.

Currents.—From January to June, inclusive, when north-westerly winds prevail, the current in the Inner channel sets mostly northward, except if the winds are strong when, for a short time, it may set south-
ward ; on such occasions the water banks up in narrow channels, and
35 the north-going current becomes stronger when the wind fails but seldom attains a rate of more than three-quarters of a knot.

Winds.—In summer there are occasional westerly and south-westerly gales ; at such times the sea in the Inner channel (*Lat.* 20° 09' N., *Long.* 40° 07' E.) becomes very confused and renders navigation
40 difficult.

FARASĀN BANK.—**General remarks.**—Farasān bank, the northern extremity of which lies about 12 miles south-westward of Al Lith, extends about 320 miles south-south-eastward to Kamarān island, which forms the western side of Kamarān bay ; it has a general
45 width of about 50 miles, and its north-eastern edge forms the south-western side of the Inner channel.

Charts 321, 8c, 8d.

This bank, which is encumbered with dangers, was successfully crossed, in 1917, about midway between Abu Latt (Abulat) island,
50 13 miles south-westward of Al Lith, and Sirrain (Surrein) island, 32 miles south-eastward of Abu Latt island. On this part of the bank there are numerous coral reefs, which are in some cases separated by

Charts 8c, 2523.

Charts 321, 8c, 8d.

deep channels ; the reefs seen during this passage were clearly visible. The reefs generally in this part of the Red sea differ from the off-lying reefs near the coast in that they are more regularly defined, of a lighter colour, and are usually steep-to on all sides. It is considered from this crossing that the passage across the bank is not quite impracticable, but no attempt to take the passage should be made unless very exceptional circumstances render it necessary. 5

Chart 8d.

Although there are channels amongst the islands and reefs on the broad part of the bank between the parallels of about 18° N. and 17° N. latitude, they are little frequented on account of their great depth and distance from the coast.

Chart 8c, 8d.

If emergency render it necessary for a vessel to pass from seaward to the Inner channel she should approach Farasān bank at such a time as would leave sufficient daylight to cross it ; some of the sunken dangers are only visible in clear weather, and with the sun astern.

The position of the reefs, as charted, are considered doubtful.

Chart 321.

Islets and dangers on northern part.—Shi'b Janāb (Shab Jenab), the northern extremity of which is situated about 10 miles westward of the north-western end of Abu Latt island, extends 6½ miles southward, and dries near its centre ; the sea breaks over this reef.

Shi'b Sulaim (Shab Suleim), lying about 1½ miles eastward of the northern part of Shi'b Janāb, dries.

Between Shi'b Janāb and Shi'b Sulaim is another reef, which dries, and extends 8½ miles south-eastward ; on this latter reef, about 2½ miles within its south-eastern extremity, are two conspicuous brown patches.

The positions of these three reefs are doubtful, the currents in their vicinity are strong and uncertain in direction, and the depths are too great for anchoring.

Abu Latt island, the northernmost island on Farasān bank, attains an elevation near its southern end of 100 feet (30^m5) ; the eastern side of this part of the island is rugged and the western side precipitous. About 1½ miles north-westward of the summit of this island (*Lat.* 19° 58' N., *Long.* 40° 08' E.) is a conspicuous detached conical rock, 92 feet (28^m0) high ; northward of this rock the island is low and sandy, with several rocky knolls, from 10 to 20 feet (3^m0 to 6^m1) high. The island is uninhabited.

Abu Latt island is bordered by a reef, which dries, and extends to as much as one mile from its south-western side and 2 cables from its north-eastern side ; on the reef south-westward of the island is an islet, 25 feet (7^m6) high, and about 1½ miles south-south-eastward of this islet a sandy cay, over which the sea breaks ; on the reef north-eastward of the island are three steep rocks, the highest being 50 feet (15^m2) high, and about half a mile south-south-eastward of them and nearer the coast of the island is a conspicuous mushroom-shaped rock. A shoal, with a depth of 2½ fathoms (4^m6) over it, lies close northward of the northern edge of the reef bordering Abu Latt island and about half a mile from the north-western extremity of this island ; a coral patch, with a depth of 7 fathoms (12^m8), lies 1½ miles south-eastward of the south-eastern end of this island.

Charts 8c, 2523.

M*

Chart 321.

The dangers on the eastern edge of Farasān bank are described with the Inner channel on page 329.

- Marmar or Abu Handal islet, $2\frac{3}{4}$ miles south-south-westward of the southern extremity of Shi'b Janāb, is composed of coral and is low and sandy, with a conspicuous clump of bushes near its south-western extremity; it is bordered by a coral reef.

Dohra islet, $1\frac{1}{2}$ miles westward of Marmar, lying on the north-eastern edge of a small coral reef, is low and covered with scrub.

- 10 Al Jadīr (El Jedir) islet, $2\frac{3}{4}$ miles south-south-eastward of Marmar, is sandy, and is fringed by a coral reef; a patch lies $1\frac{1}{2}$ miles west-south-westward, a reef about $3\frac{1}{2}$ miles westward, and another reef about $1\frac{1}{2}$ miles southward, of this islet.

- 15 Malathu islet, $3\frac{1}{2}$ miles south-westward of Al Jadīr islet, lies on the eastern edge of a small coral reef; it is low and sandy, of a whitish appearance, and can be identified by some white graves.

Charts 321, 8c.

- A line of reefs, with deep passages between them, extends about 17 miles south-south-eastward of Shi'b Sulaim, thence south-eastward and southward is a mass of reefs through which there is no known passage; Shi'b Murabba', situated in this foul area, $14\frac{1}{2}$ miles south-south-eastward of Abu Latt island, consists of two well defined reefs of a brownish colour.

Chart 321.

- 25 Shi'b as Sab'a, Shi'b Sha'ir, Shi'b al Gīrb, Shi'b 'Ammār (Shab Amar), and Danak islet, lie from about $8\frac{1}{2}$ to 15 miles south-south-eastward and south-eastward of Malathu islet. Danak islet, which is fringed by a reef, is composed of coral, covered with bushes, and attains an elevation of about 14 feet (4^m3); there are two cairns, each 10 feet 30 (3^m0) in height, one on the northern and the other on the south-eastern side of this islet; a coral reef, which dries, lies about half a mile south-south-eastward of Danak islet.

Chart 8c.

- Jabbāra (Jebbara) islet, $4\frac{1}{2}$ miles south-south-eastward of Danak 35 islet (Lat. $19^\circ 32' N.$, Long. $40^\circ 02' E.$), is composed of coral and is low and sandy; it is fringed by a reef, which is steep-to. Shi'b al Jabbāra (Shab el Jebbara), Shi'b al Ma'dhūn (Shab el Mahdhun), Shi'b al Mudhārr, and Shi'b as Sāqa (Shab Assaka), lie about $3\frac{1}{2}$ miles north-eastward, 2 miles north-eastward, $1\frac{1}{2}$ miles north-westward, and 40 $3\frac{1}{2}$ miles south-south-eastward, respectively, of Jabbāra islet; there is a sand cay on Shi'b al Ma'dhūn and a rocky coral islet on Shi'b as Sāqa.

- Shi'b Dauqa (Shab Dauka), $7\frac{1}{2}$ miles south-south-eastward of Shi'b as Sāqa, is a coral reef, over which the sea breaks; a shoal, with a 45 depth of one fathom (1^m8) over it, lies $2\frac{1}{2}$ miles westward of the southern part of this reef.

Farasān bank, southward of Shi'b Dauqa, is continued on page 336.

Chart 321.

- Anchorage.**—Good anchorage, sheltered from northerly and north- 50 westerly winds, in depths of 14 fathoms (25^m6), may be obtained off the south-eastern side of Abu Latt island.

INNER CHANNEL.—Al Lith to Ras Mahāsin.—**Coast.**—**Dangers.**—From Marsa Ibrāhīm the coast, which is low and covered

Charts 8c, 2523.

Chart 321.

with scrub, trends $3\frac{1}{2}$ miles south-eastward, and thence $8\frac{1}{2}$ miles east-south-eastward to Marsa Rāka, an inlet in the coastal reef, where it rises to a ridge of sandhills, of which North Rāka hill and South Rāka hill are the most conspicuous; within these sandhills a sandy plateau rises to numerous low hillocks. 5

The conspicuous palm on the coast west-south-westward of Al Līth was mentioned on page 323; a clump of conspicuous palms stands on the coast $3\frac{1}{2}$ miles farther south-eastward and, to a vessel approaching from south-eastward, appears as two palm trees. 10

The area between Shi'b Habil and the coast is foul, with many coral patches, the positions of which can best be seen on the chart.

Foul ground extends to as far as $2\frac{1}{2}$ miles offshore between the conspicuous clump of palms mentioned above and Marsa Rāka; southward of this foul area lie some detached shoals, with a least depth of $15\frac{1}{2}$ fathoms (4^m6). 15

From Marsa Rāka the coast trends $7\frac{1}{2}$ miles east-south-eastward and thence $3\frac{1}{2}$ miles southward to Jalājil (Jelajil), a white sandy promontory; the coast is fringed by a reef, which extends to as far as 7 cables offshore. A range of sandhills extends about 7 miles east-south-eastward of the Rāka hills, whence the coast to Jalājil is low and sandy. 20

A shoal, with a depth of 2 fathoms (3^m7) over it and another with a depth of $2\frac{1}{2}$ fathoms (5^m0) over it, lie $1\frac{1}{2}$ miles south-westward and 3 miles south-eastward of Marsa Rāka and $1\frac{1}{2}$ and $1\frac{1}{2}$ miles offshore, respectively. 25

Chart 8c, plan of Jelajil.

Jalājil rises to dunes, 25 feet (7^m6) high; a conspicuous white cliff stands at its western extremity. A rocky spit extends about $1\frac{1}{2}$ miles north-westward of Jalājil, and some detached reefs and shoals lie within about 2 miles north-westward of this promontory. 30

Charts 14, plan of Approaches to Ras el Askar; 321.

From Jalājil (Lat. $19^\circ 55' N.$, Long. $40^\circ 31' E.$) the coast, which is low and sandy, trends $1\frac{1}{2}$ miles eastward to Misna, where there are a few huts, and thence about 4 miles south-south-eastward to Ras al 'Askar; Ras al 'Askar is covered by a dense belt of mangroves which, standing on the low ground where Wādi Halya flows into the sea, renders the point conspicuous. 35

Chart 321.

Jalājil (Jelajil) bank, with depths of less than 10 fathoms (18^m3) over it, extends about 3 miles south-westward from Misna; near the south-western end of the bank are two shoals, with depths of 5 and 4 fathoms (9^m1 and 7^m3) over them, respectively. This bank was reported, in 1920, to have extended about half a mile southward, with depths of 3 fathoms (5^m5) over it in places. 40

Chart 14, plan of Approaches to Ras el Askar.

Shi'b al Farkan extends, from a position about $2\frac{1}{2}$ miles west-north-westward of the northern extremity of Ras al 'Askar, 4 miles south-eastward, where it terminates in Minto ledge which shows white; on this bank are numerous coral heads. Some detached shoals, with depths of from 15 to 17 feet (4^m6 to 5^m2) over them, lie from 3 to 6 cables northward of this bank. 45

'Askar channel, between the coastal reef and the eastern side of Shi'b al Farkan, is less than one cable wide in places; it is available for small vessels with local knowledge, but it is not recommended.

Charts 321, 8c, 2523.

Chart 14, plan of Approaches to Ras el Askar.

A reef, which dries, with a detached sunken rock, about one cable southward of it, the positions of which can best be seen on the plan, lie near the south-eastern end of this channel. The reefs are visible
5 and steep-to.

Between the south-eastern extremity of Ras al 'Askar and Ras al Humāra, $2\frac{1}{2}$ miles south-eastward, is a bight, which is almost filled by the coastal reef; the shores of the bight are low and sandy and sparsely covered with mangroves.

- 10 Shi'b Abu Tuqm (Shab Abu Tukm), about 4 cables westward of Ras al Humāra, dries; some shoals lie within about 4 cables south-westward of its south-western side.

Charts 14, plan of Approaches to Ras el Askar; 321.

- From Ras al Humāra the coast trends about $4\frac{1}{2}$ miles south-eastward
15 to Ras Kinnateis, forming the south-western side of a peninsula composed of low sand dunes, with a belt of mangroves on each side of it; the coast is fringed by a coral reef which extends about $1\frac{1}{2}$ miles south-eastward of Ras Kinnateis; on this reef, about half a mile south-eastward of Ras Kinnateis, are two above-water rocks with bushes on them.

Chart 321.

- Ghubbat al Mahāsin is entered between Ras Kinnateis and Ras Mahāsin, about $8\frac{1}{2}$ miles south-eastward; a chain of coral reefs and low-lying islets extends across the mouth of this bay. The eastern side of the bay is low and backed by sandhills which terminate at Ras
25 Ahmar, about $2\frac{1}{2}$ miles north-eastward of Ras Mahāsin; there are some scattered clumps of mangroves along the shores of the bay. Shaqqa ash Shāmiya (Shakkat el Shamiya) and Shaqqa al Yamaniya (Shakkat el Yemeniya) are two groups of huts standing on the northern and eastern sides of the bay, respectively.

- 30 Ras Mahāsin (*Lat.* $19^{\circ} 38' N.$, *Long.* $40^{\circ} 46' E.$), low, sandy, and covered with scrub, has a clump of mangroves on its western side; the land here rises to Mahāsin bluff, about $1\frac{1}{2}$ miles south-south-eastward, which is cliffy and about 35 feet ($10^m 7$) high; Zughaib islet, lying on the coastal reef, about $2\frac{1}{2}$ miles southward of the northern
35 extremity of Ras Mahāsin, is low and sandy, and is hardly visible.

- Gheibisa islet, about $1\frac{1}{2}$ miles south-south-eastward of Ras Kinnateis, Umm Ibsas islet, a quarter of a mile south-south-eastward of Gheibisa islet, and Minzak islet, about half a mile south-eastward of Umm Ibsas islet, lie on a coral reef, and are low and sandy; a man-
40 grove bush on Umm Ibsas islet is a good mark. Two detached coral patches, which dry, lie from about one to 2 cables northward of Gheibisa islet.

- Umm al Gharāniq (Umm el Gharanik) islands, lying about $1\frac{1}{2}$ miles north-westward of Ras Mahāsin, are thickly bordered with mangroves;
45 Qadd al Ghubba, about half a mile south-westward of the southern extremity of these islands, is a low sandy islet at the north-eastern edge of a coral reef. A detached rock, with a depth of less than 6 feet ($1^m 8$) over it, lies about $1\frac{1}{2}$ miles east-north-eastward of the northern extremity of Umm al Gharāniq islands.

- 50 Umm al Qandil (Umm el Kandil), lying on a reef, which dries, about one mile east-north-eastward of Ras Kinnateis, is a low islet bordered by a thick belt of mangroves; the reef extends about three-quarters of a mile east-north-eastward of the south-eastern end of this islet and has a well defined edge; a rock, above water, covered with bushes,

Charts 321, 8c, 2523.

Chart 321.

lies on a reef, which extends about a quarter of a mile north-north-eastward of the islet.

A vessel using the Inner channel between Al Lith and Sirrain island should proceed through Lunka and Enterprise channels or Weymss passage; these channels are described below.

Wemyss passage.—Dangers.—Directions.—Wemyss passage leads from north-eastward of Abu Latt island south-eastward through Chisholm passage, south-westward of Shi'b Ghufra, about $16\frac{1}{2}$ miles south-eastward of Abu Latt island, between Daughish rock and Shi'b Khadra, about $8\frac{1}{2}$ miles east-south-eastward of Shi'b Ghufra, and thence eastward into Enterprise channel.

From the north-western end of Wemyss passage a channel leads northward into Lunka channel; this channel passes between Al Qad al Wustāni (Kad el Wastoni), 3 miles north-north-eastward of the northern extremity of Abu Latt island, and a shoal, with a depth of $3\frac{1}{2}$ fathoms (6^m4) over it, about one mile east-south-eastward of Al Qad al Wustāni, and thence into Lunka channel, passing south-eastward of Qita' al Qursh.

Al Qad al Wustāni dries, and is clearly visible; the sea breaks over it during strong winds.

Chisholm passage leads between Chisholm rock, which lies at the north-eastern edge of Farasān bank, 7 miles east-south-eastward of the south-eastern end of Abu Latt island, on the south-western side, and several shoals and rocks, the positions of which can best be seen on the chart, on the north-eastern side; it is about half a mile wide and, during strong winds, the sea breaks over the reefs on both sides, some of which dry.

Shi'b Ghufra (*Lat.* $19^{\circ} 47' N.$, *Long.* $40^{\circ} 23' E.$), lying at the south-western extremity of Ghawwās bank, dries, and is conspicuous; it is light green in colour. Shi'b Khadra, lying near the south-western edge of Ghawwās bank, at its south-eastern end, dries, and has a sand cay on it which sometimes shifts with wind and sea; some detached patches of coral reefs lie close southward of this reef.

Daughish rock has a depth of 5 fathoms (9^m1), coral, over it; a line of shoals extends from it to a sand cay on Farasān bank, $4\frac{1}{2}$ miles south-south-westward.

A vessel approaching Wemyss passage from westward should steer eastward on the parallel of $20^{\circ} N.$, passing northward of Shi'b Janāb, Shi'b Sulaim, and Abu Latt island; if coming from Al Lith the summit of Abu Latt island, bearing 185° , leads from Lunka channel to Weymss passage, clear of all dangers.

From about $1\frac{1}{2}$ miles north-eastward of Abu Latt island a south-easterly course should be steered through Chisholm passage, passing from about one mile westward to $1\frac{1}{2}$ miles southward of Shi'b Ghufra, and thence an east-south-easterly course should be held, passing about $1\frac{1}{2}$ miles southward of Shi'b Khadra. After passing southward of Shi'b Khadra a vessel should steer eastward towards Sanak islet, about $6\frac{1}{2}$ miles east-south-eastward of Shi'b Khadra, until the south-western extremity of Melma islet, $3\frac{1}{2}$ miles east-north-eastward of the same reef, bears 000° , when course should be altered north-eastward into the main Inner channel.

Sanak islet is low, covered with scrub, and bordered by a coral reef which extends 5 cables westward of this islet; the western end of this

Chart 321.

reef is not clearly defined, but on its south-western edge are a few coral heads above water.

Charts 14, plan of Approaches to Ras el Askar ; 321.

Melma islet is low, sandy, and covered with scrub ; it is fringed by a reef which extends 5 cables southward of it. There are several shoals, the positions of which can best be seen on the chart, southward and south-westward of this islet.

Chart 321.

- 10 Abu Latt and Sirrain islands are good landmarks when using this passage.

Sirrain island, both ends of which are low-lying, the western end being marshy, has a few clumps of mangroves on its north-eastern side ; its summit is 201 feet (61^m3) high and the westernmost hill flat-topped, and between them is a conspicuous truncated cone, about 100 feet (30^m5) high. The high ground consists mostly of elevated coral reefs, very rugged, with a base of red sandstone outcropping on the southern coast, which rises steeply. The island is uninhabited.

- 20 Sirrain island is bordered by a coral reef, on which lie several rocks, above water ; this reef extends about 1½ miles north-westward, 1½ miles northward, and 1½ miles east-south-eastward of the island. Two reefs, which dry, lie from about 1½ to 2 miles northward of the north-eastern side of Sirrain island, and shoals, with a least depth of 1½ fathoms (2^m7), lie within a distance of from about 1½ to 3½ miles eastward of its south-eastern end.

Sirrain (Surrein) patches extend about 5 miles northward of the coral reef bordering the northern side of Sirrain island (*Lat.* 19° 37' N., *Long.* 40° 37' E.) ; they consist of numerous coral heads, and this area should be avoided.

- 30 **Lunka channel.—Dangers.**—Lunka channel extends from the western approach to Al Lith to a position about 4 miles southward of Jalājil, at the north-western entrance to Enterprise channel ; the track passes between the reefs south-eastward of Qita' al Qursh, on the south-western side, and Shi'b Habil, on the north-eastern side, thence south-westward of Imogene and Rāka shoals, and between Shi'b Subaikha (Shab Sebeikha) and the northern extremity of Ghawwās bank. The general width of the channel is 1½ miles, but southward of Shi'b Subaikha the fairway is less than half a mile wide.

- Imogene shoal, about 5½ miles southward of the conspicuous palm on the coast west-south-westward of Al Lith, is the southernmost of a line of shoals extending northward to within a short distance of the coast, and has a least depth of 4¾ fathoms (8^m7), coral, over it ; it shows as a patch of lightish green water.

- Rāka shoals, about 8 miles farther east-south-eastward, and lying from 2¼ to 2¾ miles offshore, are a group of well defined reefs, some of which dry ; North reef, the south-westernmost reef, shows as a patch of light green water.

- Shi'b Mudhārr, about half a mile south-eastward of North reef, has depths of less than 6 feet (1^m8) over it, and is well defined ; a 3½-fathom (6^m4) patch lies about 1½ miles east-south-eastward of Shi'b Mudhārr.

Shi'b Subaikha, lying about 4½ miles west-north-westward of Jalājil, consists of two rocky patches, with depths of less than 6 feet (1^m8) over them ; the southern patch is light green in colour and usually visible.

Charts 8c, 2523.

Chart 321.

Gordon patches, close south-westward of the fairway and about half a mile south-south-westward of the southern extremity of Shi'b Subaikha, are a group of shoals with a depth of less than 6 feet (1^m8); the water over them is but little discoloured.

Charts 14, plan of Approaches to Ras el Askar; 321.

Ghawwās bank, the northern extremity of which lies close southward of Gordon patches, is an extensive bank on which are numerous coral patches; it extends about 11 miles south-eastward to the Janābiyāt (Jinnabiyat) islands. There is no navigable channel across this bank. 10

From Shi'b Subaikha to within about one mile of the entrance to Enterprise channel Lunka channel is free from dangers, but it is muddy and the bottom scarcely visible in depths of 5 fathoms (9^m1).

Enterprise channel.—Islands and dangers.—Buoy.—Enterprise channel, the continuation south-eastward of Lunka channel, 15 passes between Qita' al Auwal (Katat el Awwal) and Shi'b 'Auda (Shab Awda), on the north-eastern side, and Qita' ath Thāni (Katat el Tani) and the shoals off the north-eastern edge of Ghawwās bank, on the south-western side.

Chart 14, plan of Approaches to Ras el Askar.

Qita' al Auwal, lying about 2½ miles westward of Ras al 'Askar, has a least depth of 14 feet (4^m3) over it, and is marked at its northern end by a black and white chequered spherical buoy, surmounted by a staff. 20

Shi'b 'Auda (*Lat.* 19° 49' N., *Long.* 40° 33' E.), lying at the western 25 edge of Shi'b al Farkan and about 2 miles westward of Ras al 'Askar, dries; a shallow bank extends about 3 cables north-westward and westward of its northern part.

Qita' ath Thāni, a group of shoals, with a least depth of 15 feet (4^m6), lies about 4 cables westward of this shallow bank. 30

A group of shoals, with a least depth of 9 feet (2^m7), lies close off the south-eastern part of the north-eastern side of Ghawwās bank and about 6 cables south-westward of the south-western side of Shi'b 'Auda.

The track through Enterprise channel passes north-eastward of 35 Qita' al Bitān, between Al Mafriqat (El Mafrikat) and Shi'b Namis, into Bāb al Bahhār, and thence eastward of Muhammad (Mohamd) islet and Qita' Kashafi.

Qita' al Bitān, about one mile southward of the southern side of Shi'b 'Auda, has a least depth of 10 feet (3^m0), and is clearly visible; 40 Al Mafriqat, 6½ cables east-south-eastward of Qita' al Bitān, dries; Shi'b Namis, 6½ cables north-eastward of Al Mafriqat, dries, and is steep-to.

Janābiyāt islands, about 1½ miles south-westward of Ras al Humāra, are a group of islands and islets, bordered by coral reefs. Janābiyāt 45 island, the largest and western island of the group, is covered with scrub and mangroves, and is about 10 feet (3^m0) high in places on its northern side; a shoal, with a rocky patch of less than 6 feet (1^m8) at its southern end, lies 5 cables north-westward of this island. Melma islet (page 330) is connected with Janābiyāt island by a coral reef 50 which dries; a detached reef, on which are two above-water rocks covered with scrub, lies about 2 cables north-eastward of Melma islet. Muhammad islet, the north-easternmost of the Janābiyāt islands, is low-lying, and has a conspicuous clump of bushes near its centre; it

Charts 321, 8c, 2523.

Chart 14, plan of Approaches to Ras el Askar.

is fringed by a coral reef, which extends 2 cables north-westward of it. About 5 cables north-westward of Muhammad islet is a detached reef, and a shoal, with a depth of less than 6 feet (1^m8), lies between them ;
 5 a rocky patch, with a depth of less than 6 feet (1^m8), lies 3 cables northward of this islet.

Bāb al Bahhār is the channel between the rocky patch northward of Muhammad islet and the shoals south-westward of Shi'b Abu Tuqm ; these shoals are visible when the sun is in a favourable
 10 position.

Qita' Kashafi, about 2½ cables south-eastward of Muhammad islet, has a depth of 11 feet (3^m4) over it.

Chart 321.

From close eastward of Qita' Kashafi the track passes between
 15 Sanak islet and a shoal, with a depth of 3½ fathoms (5^m9) over it, about half a mile westward, eastward of Sirrain patches and the reefs northward of the north-eastern side of Sirrain island, and between Shi'b Abyadh (Shab Abyad) and the shoals eastward of the south-eastern end of Sirrain island ; the fairway in this part of the channel has a
 20 least width of about 2 cables.

Several detached reefs, which dry, lie on the north-eastern side of the fairway between Qita' Kashafi and Sanak islet ; a reef, which dries, lying about a quarter of a mile north-north-eastward of this islet, has a small sand cay on it and is fairly conspicuous ; Shi'b Sull, about
 25 three-quarters of a mile south-south-eastward of Sanak islet (*Lat.* 19° 43' N., *Long.* 40° 38' E.), dries, and is clearly visible.

Shi'b Abyadh, a conspicuous white reef, about 3 miles east-north-eastward of the south-eastern extremity of Sirrain island, dries, and is steep-to ; between this reef and Umm al Gharāniq islands is an
 30 area of foul ground, and many detached reefs lie near and north-eastward of an imaginary line joining Shi'b Abyadh and Shi'b Sull.

The Inner channel, south-eastward of Ras Mahāsin, is continued on page 334.

Charts 14, plan of Approaches to Ras el Askar ; 321.

35 **Directions.**—The reefs in the Inner channel are all clearly visible.

A vessel approaching Lunka channel from north-westward should pass between Qita' al Qursh and Shi'b al Jiffin, whence a south-easterly course should be steered through the fairway into Enterprise channel, and thence into Bāb al Bahhār.

40 The centre of Sanak islet, bearing 148°, leads, from eastward of Muhammad islet, through the fairway, until the summit of Sirrain island bears 184°, when a vessel should steer for it on that bearing until eastward of the shoal, with a depth of 3½ fathoms (5^m9), half a mile westward of Sanak islet ; she should then alter course south-south-
 45 eastward to pass about a quarter of a mile south-westward of Shi'b Abyadh.

H.M.S. *Clematis* reported, in 1922, that the passage close northward of Muhammad islet appeared to be preferable to Bāb al Bahhār, as it is difficult to identify the dangers between which that channel lies
 50 whilst, by keeping the Muhammad islet reef, which is usually clearly visible, close aboard, these dangers are avoided.

From near the south-eastern end of Lunka channel a vessel wishing to use 'Askar channel should steer east-south-eastward between Jalājil and Jalājil bank, and keep the coastal reef between Jalājil and Ras al

Charts 321, 8c, 2523.

Charts 14, plan of Approaches to Ras el Askar ; 321.

'Askar, which is clearly defined, close aboard ; then, keeping along the eastern and north-eastern sides of Shi'b al Farkan and Minto ledge, she should pass south-eastward of Minto ledge, and through Bāb al 'Askar, the channel between that reef and two 17-foot (5^m2) patches about 4 cables south-eastward of it, thence south-eastward into Bāb al Bahhār, and proceed as directed above. 5

The directions for the Inner channel, south-eastward of Ras Mahāsin, are continued on page 336.

Chart 321.

10

Anchorage.—Directions.—Small vessels with local knowledge can obtain anchorage in a bight in the coastal reef about 3½ miles south-south-eastward of Al Lith ; it is much used by dhows for shelter from strong winds.

Large vessels with local knowledge can obtain good anchorage in depths of 14 fathoms (25^m6), coral, at the northern end of Rāka shoals, about 2½ miles south-westward of Marsa Rāka ; this anchorage is much used by dhows. A vessel approaching the anchorage from Lunka channel should pass southward of North reef, and between it and the reefs eastward, which are visible, but this passage should not be attempted unless the sun is in a favourable position. 20

Marsa Rāka (*Lat. 20° 03' N., Long. 40° 26' E.*), which is available for small vessels with local knowledge, has depths of from 3 to 4 fathoms (5^m5 to 7^m3) in it ; it is sometimes used by dhows.

Chart 8c, plan of Jelajil.

25

Small vessels with local knowledge can obtain anchorage in a depth of 7 fathoms (12^m8), about 1½ miles northward of Jalājīl, between the coast and the off-lying detached reefs, but the approach is difficult and it is not recommended.

Chart 14, plan of Approaches to Ras el Askar.

30

There is good anchorage for small vessels with local knowledge about 4 cables north-westward of Ras al Humāra in depths of about 4 fathoms (7^m3), sand and coral ; it is sheltered from south-westward by Shi'b Abu Tuqm.

Chart 321.

35

There is sheltered anchorage in Ghubbat al Mahāsin, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), coral and mud, about 2 cables north-eastward of the above-water rock north-north-eastward of Umm al Qandil.

North channel, leading into Ghubbat al Mahāsin, lies between Ras Kinnateis and Gheibisa islet ; a detached reef, which dries, three-quarters of a mile southward of Ras Kinnateis, divides this channel into two. The northern part is not recommended on account of shoals which are not clearly visible ; the southern part is 1½ cables wide at its entrance and is recommended. After passing southward of this detached reef a vessel should bear northward and keep the coastal reef aboard to avoid a detached reef, which dries, lying close northward of Gheibisa islet. 45

South channel, leading into Ghubbat al Mahāsin, lies between Ras Mahāsin and the southern Umm al Gharāniq island ; the reefs on each side of the channel are clearly visible. Ras Ahmar is a good landmark for this channel. 50

The water in this bay is muddy and the bottom is not clearly visible in depths of 5 fathoms (9^m1).

Charts 321, 8c, 2523.

Chart 322.

INNER CHANNEL (continued from page 332).—**Ras Mahāsin to Al Qunfidha.**—**Islands and dangers.**—The Inner channel from Ras Mahāsin to Al Qunfidha (Kunfida), about 36 miles south-south-eastward, lies between the eastern edge of Farasān bank and the islets and reefs off-lying the coast ; it passes between Safiq (Safik) island and the Nahūd islets, eastward of Long island and the Fara' islands, and between Pelican island and the islets about 2 miles eastward, and thence westward of Crawford and Cox reefs.

10 Safiq island, $6\frac{1}{2}$ miles south-eastward of Sirrain island and $3\frac{3}{4}$ miles offshore, is low and sandy, with a few bushes on it ; these two islands are almost connected by reefs which extend to within about 5 cables of the recommended track. Coral reefs extend about half a mile northward and eastward of Safiq island.

15 Nahūd islets, lying from one to 2 miles south-westward of Ras Zughaib, a hilly point about $2\frac{1}{2}$ miles south-eastward of Mahāsin bluff (*Lat. $19^{\circ} 37' N.$, Long. $40^{\circ} 46' E.$*), lie on a reef which extends about $1\frac{1}{2}$ miles south-south-eastward of them ; the northern edge of the reef is usually visible ; a $3\frac{1}{2}$ -fathom (6^m4) patch lies at the western edge of this reef.

20 Two reefs, with depths of less than 6 feet (1^m8) over them, lie about $1\frac{1}{2}$ miles eastward and $3\frac{1}{2}$ miles east-south-eastward, respectively, of the Nahūd islets ; there are reported to be patches, with depths of from 6 to 8 fathoms (11^m0 to 14^m6), between the Nahūd islets and these reefs.

25 Ghurāb (Ghorab) islet, lying about $6\frac{1}{2}$ miles east-south-eastward of the Nahūd islets, is low and flat, with well defined extremities ; a chain of low sandy islets and cays extends from 2 to $2\frac{1}{2}$ miles north-north-westward and south-eastward of Ghurāb islet.

30 A chain of low sandy islands and islets, connected by reefs, extends 10 miles south-eastward of Safiq island, and lie at the eastern edge of Farasān bank ; the eastern end of Umm 'Ali, the northernmost of these islets, is covered with bushes, and is conspicuous from northward ; Abu Rukāba islet, 6 miles south-eastward of Umm 'Ali, has a conspicuous clump of bushes on it ; Long island, the south-easternmost of these islets, has some conspicuous clumps of bushes near its northern end.

Fara' islands, lying $1\frac{1}{2}$ miles south-eastward of Long island, are low and sandy ; a sand cay lies between Third islet and Next island ; 40 Next island is covered with low bushes. Pelican island, the southern island of this group, is from 20 to 30 feet (6^m1 to 9^m1) high, with a lagoon indenting its eastern side ; the western part of this island is covered with dry scrub and the eastern part with mangroves ; a rock, covered with bushes, lies at the edge of Farasān bank, 3 cables east-south-eastward of Pelican island.

Baggāla (Bagala) channel is a break in the eastern side of Farasān bank about $1\frac{1}{2}$ miles south-south-eastward of Pelican island ; this channel crosses the bank and is used by native craft.

50 Ras Morwiya (Matwiya) is situated about 16 miles south-south-eastward of Ras Zughaib, and Ras Matūra, about $3\frac{1}{2}$ miles further south-eastward ; the coastal reef, in the vicinity of Ras Morwiya, extends to as much as 2 miles offshore and is steep-to.

About $1\frac{1}{2}$ miles west-south-westward of Ras Morwiya is the northern end of a reef, which extends $2\frac{1}{2}$ miles south-south-eastward ; a detached

Chart 322.

rock, with a depth of less than 6 feet (1^m8) over it, lies about half a mile westward of the northern end of this reef.

A group of islets lies about 3 miles westward of Ras Matūra ; this group was reported, in 1929, to lie about 2 miles further south-eastward. An islet, fringed by a reef, lies 1½ miles south-eastward of this group, and a detached rock, with a depth of less than 6 feet (1^m8) over it, half a mile farther east-south-eastward. 5

Several rocks and reefs lie from about half a mile to 1½ miles offshore between Ras Matūra and the northern entrance point of the bay, on the eastern shore of which stands the town of Al Qunfidha, about 10 miles south-south-eastward. 10

Satterley patch, lying about 10 miles south-south-eastward of Pelican island (*Lat.* 19° 17' N., *Long.* 40° 53' E.), has a depth of 4½ fathoms (8^m7) over it. 15

Anchorage.—There is good anchorage for vessels with local knowledge in depths of 5 fathoms (9^m1) off the coast in the vicinity of Dauqa al Yamaniya (Dauka el Yemeniya), a village 4½ miles eastward of Ras Zughaib ; this anchorage is sheltered from westward and south-westward by the Nahūd islets and the reef east-south-eastward of this group. 20

There is good anchorage in depths of about 10 fathoms (18^m3), sand, off the north-eastern side of Pelican island, well sheltered from westerly and south-westerly winds.

Chart 8c, plan of Kunfida.

Al Qunfidha and approaches.—The small walled town of Al Qunfidha consists chiefly of huts ; the most conspicuous objects from southward are two minarets in the middle of the town, a martello tower a quarter of a mile southward of it, and a black hut on the northern entrance point of the bay. Between the martello tower and the town is a mosque, with a minaret. 25 30

Charts 8c, plan of Kunfida ; 322.

Dangers.—**Anchorage.**—Crawford reef, on which there is a small sand cay in summer, is awash, and lies about 2 miles west-south-westward of the northern entrance point ; it is generally clearly visible. 35 A small reef was reported, in 1918, to lie about a mile northward of this reef ; its position is approximate, and it was not examined, but it is reported to have a depth of less than 6 feet (1^m8) over it.

Chart 8c, plan of Kunfida.

Cox reef, lying about 2½ miles south-westward of the northern entrance point, has a least depth of about 3 feet (0^m9) over it, and is difficult to distinguish until close to ; a shoal, with a least depth of 2½ fathoms (4^m6), lies about 4 cables north-north-eastward of this reef. 40

The bay is filled with the coastal reef, which extends 4 cables westward of the northern entrance point ; a tongue of reef extends 6 cables west-north-westward from the coastal reef close southward of the low rounded south-eastern entrance point, which is situated about 1½ miles south-eastward of the northern entrance point. 45

A spit, with a depth of 2½ fathoms (4^m6) at its southern edge, extends 1½ cables southward of the coastal reef extending westward of the northern entrance point, and about 3 cables farther southward is a detached reef, which dries ; between this detached reef and the coastal reef north-eastward are patches of reef.

A detached reef, the northern extremity of which is situated 8 cables

Charts 322, 8c, 2523.

Charts 8c, plan of Kunfidha.

westward of the south-eastern entrance point, extends about one mile south-south-eastward; on its north-eastern side, about $6\frac{1}{2}$ cables from its northern extremity is an islet, with some bushes on it. The channel
 5 between this reef and the coastal reef is encumbered with wrecks.

There is anchorage, in depths of from 5 to 6 fathoms (9^m1 to 11^m0), in the southern part of the bay westward of the town, and from 5 to 8 cables offshore. It is sheltered from the southward and south-westward by the reef on which stands the islet.

- 10 The Inner channel, southward of Al Qunfidha (*Lat.* $19^\circ 08' N.$, *Long.* $41^\circ 04' E.$), is continued on page 339.

Chart 322.

Directions (continued from page 333).—The track through the Inner channel is shown by a pecked line on the chart.

- 15 From about a quarter of a mile south-westward of Shi'b Abyadh a south-easterly course leads through the fairway until eastward of Abu Rukāba islet, whence a south-south-easterly course should be steered so as to pass about one mile westward of Crawford reef and 5 cables westward of Cox reef; Umm as Saifa, an islet $6\frac{1}{2}$ miles southward of
 20 the northern entrance point of the bay, on the eastern shore of which is Al Qunfidha town, is a good leading mark and is usually visible from some distance northward of Crawford and Cox reefs.

Charts 8c, plan of Kunfidha; 322.

- If proceeding to the anchorage off Al Qunfidha a vessel should pass
 25 about 3 cables southward of Cox reef and then steer north-eastward for the entrance to the bay.

The directions for the Inner channel, southward of Al Qunfidha, are continued on page 342.

Chart 8c.

- 30 **FARĀSĀN BANK** (continued from page 326).—**Islets and dangers on middle part.**—Mubarak, lying near the western side of Farāsān bank, about 23 miles southward of the islet on Shi'b as Sāqa, has a depth of less than 6 feet (1^m8) over it; the sea breaks over this reef. Murābit al Khail, two reefs, over which the sea breaks,
 35 lie $1\frac{1}{2}$ miles apart and about 8 miles eastward of Mubarak. Ring reef, about $2\frac{1}{2}$ miles southward of Murābit al Khail, is composed of coral, and the sea breaks over its outer edge; there is apparently deep water within the outer edge of this reef.

- Shākir (Shaker) islet, about 5 miles south-south-eastward of Ring
 40 reef, is low sandy, and has some bushes on it; it is fringed by a coral reef. Shi'b Marās, over which the sea breaks, lies with its northern extremity about one mile westward of Shākir islet, and extends $2\frac{1}{2}$ miles south-south-westward.

Charts 322, 8c.

- 45 Tidhkār (Tedkar) islet, lying about 12 miles east-north-eastward of Shākir islet, is low, has a few bushes on it, and is fringed by a reef which extends about $1\frac{1}{2}$ miles southward of it; detached reefs, over which the sea breaks, lie about 9 miles north-westward, 4 miles north-north-eastward, and $2\frac{1}{2}$ miles east-north-eastward, respectively, of this
 50 islet.

Dūsāqiya (Doshakiya) islet, $5\frac{1}{2}$ miles east-south-eastward of Tidhkār islet, is low; two islets lie $9\frac{1}{2}$ miles eastward and $9\frac{1}{2}$ miles east-south-eastward, respectively, of it.

Charts 322, 8c, 2523.

Chart 8c.

Muska islet, $4\frac{1}{2}$ miles southward of Tidhkâr islet, is low, and lies on a coral reef, which is steep-to.

Charts 8c, 8d.

Sharbain (Sharbein) islet, 8 miles southward of Muska islet (*Lat.* $18^{\circ} 52' N.$, *Long.* $40^{\circ} 37' E.$), is composed of coral, is low and sandy, and has a few bushes on it; Abû Kulûr reef, over which the sea breaks, lies about $2\frac{1}{2}$ miles south-south-westward of Sharbain islet.

Chart 322.

Abu Saiyâl (Abû Sayal) reef, lies with its northern extremity $12\frac{1}{2}$ miles southward of Dûsâqiya islet, and extends about $4\frac{1}{2}$ miles southward; the sea breaks over this reef.

Ablo islet, $17\frac{1}{2}$ miles south-south-eastward of Dûsâqiya islet, is fringed by a reef; Abu Musha shoals, with depths of less than 6 feet (1^m8), lie from within three-quarters of a mile to $6\frac{1}{2}$ miles northward, $3\frac{1}{2}$ to $6\frac{1}{2}$ miles north-eastward, and $2\frac{1}{2}$ to $5\frac{1}{2}$ miles east-north-eastward of Ablo islet.

Shi'b Yahar and 'Irq al Jabal (Urkul Jebel), with depths of less than 6 feet (1^m8) over them, lie about $2\frac{1}{2}$ and $6\frac{1}{2}$ miles, respectively, east-south-eastward of Ablo islet.

Abu Dhahra (Abu Dahra) islet, $4\frac{1}{2}$ miles south-south-westward of Ablo islet, lies at the northern end of a reef, which extends a quarter of a mile northward and one mile southward of it; about half a mile southward of this reef is another reef, with depths of less than 6 feet (1^m8) over it, extending about $1\frac{1}{2}$ miles farther southward.

Jabbâra (Jebâra) islet, 6 miles south-south-eastward of Ablo islet, is fringed by a reef; several reefs lie from a quarter of a mile to 3 miles westward, 2 miles south-westward, three-quarters of a mile to $1\frac{1}{2}$ miles southward, and from 2 miles eastward to 3 miles south-eastward of this islet.

Dorish islet, $8\frac{1}{2}$ miles west-south-westward of Abu Dhahra islet, is low, sandy, covered with bushes, and is fringed by a reef.

Al Umm islet lies $13\frac{1}{2}$ miles south-south-eastward of Dorish islet; Sabiya islet, $1\frac{1}{2}$ miles south-eastward of Al Umm islet, is composed of coral and sand, and is covered with bushes; Maghabiya islet, $1\frac{1}{2}$ miles south-westward of Sabiya islet, is also composed of coral and sand.

About $3\frac{1}{2}$ miles north-north-eastward and $5\frac{1}{2}$ miles north-eastward of Al Umm islet have been seen a reef and a low sandy islet, respectively, also a reef about $5\frac{1}{2}$ miles eastward of Sabiya islet, and beyond them Farasân bank appeared to be encumbered with shoals.

Al Hâla islet, $1\frac{1}{2}$ miles south-south-westward of Maghabiya islet, is a sand cay.

Mafsubber islet, $7\frac{1}{2}$ miles east-south-eastward of Sabiya islet, is fringed by a reef; four detached reefs lie about $2\frac{1}{2}$ miles west-south-westward, $3\frac{1}{2}$ and $4\frac{1}{2}$ miles south-westward, and $5\frac{1}{2}$ miles south-south-westward, respectively, of this islet. A conspicuous wreck, the hull and two masts of which were visible, in 1918, lies on the second of these reefs.

Shi'b 'Alî, over which the sea breaks, lies $5\frac{1}{2}$ miles southward of Mafsubber islet, and extends about $1\frac{1}{2}$ miles south-eastward; a rock, with a depth of less than 6 feet (1^m8) over it, lies about 2 miles north-eastward of this reef.

Zuqâq (Zukak) islet, about 10 miles south-south-eastward of Al Hâla islet (*Lat.* $18^{\circ} 13' N.$, *Long.* $40^{\circ} 43' E.$), is a low sandbank; a detached

Charts 8c, 8d, 2523.

Chart 322.

reef, with a depth of less than 6 feet (1^m8) over it, and two shoals, each with a depth of one fathom (1^m8), lie 1½ miles north-north-westward, 1½ miles west-north-westward, and half a mile east-south-eastward, respectively, of this sandbank. Three reefs, each with depths of less than 6 feet (1^m8), lie 2½ and 4½ miles west-south-westward, and 3½ miles south-westward, respectively, of the same sandbank.

Shi'b Rabid lies 2½ miles east-north-eastward of Zuqāq islet, and a detached reef about three-quarters of a mile south-south-westward of Shi'b Rabid; the sea breaks over both these reefs.

Shi'b Marās, which extends 8 miles south-south-eastward, is a chain of reefs, the northern extremity of which is situated 1½ miles east-south-eastward of Zuqāq islet; the sea breaks over its northern and southern parts. Six detached rocky shoals, with depths of less than 6 feet (1^m8) over them, lie within 8 miles south-westward of the southern part of Shi'b Marās.

Dahret Abū Masāli, 3 miles south-eastward of Zuqāq islet, is a low sandbank.

Dhahrat Mirāya (Dahret Merāya) islets lie from about 6½ to 9½ miles eastward of Dahret Abū Masāli; both islets are sandy and the eastern one is fringed by a reef. Two detached rocks, with depths of less than 6 feet (1^m8) over them, lie close south-westward, and a similar rock 1½ miles south-south-eastward of the western islet; another rock, with a depth of less than 6 feet (1^m8), lies between these islets, and a similar rock about half a mile southward of the eastern islet. A bank, on which lie some pinnacle rocks, with a least depth of 2 fathoms (3^m7), lies 2½ miles south-westward of the western islet; the western side and the south-eastern extremity of this bank are steep-to. A group of reefs, with depths of less than 6 feet (1^m8), lie from within 3½ miles southward to 9½ miles south-eastward of the eastern islet.

Several reefs, with depths of less than 6 feet (1^m8), and the positions of which can best be seen on the chart, lie from within 5 to 20 miles eastward and 13 miles east-south-eastward of the eastern of the Dhahrat Mirāya islets.

Chart 8d.

A reef, with depths of less than 6 feet (1^m8) over it, lies 9½ miles southward of Dahret Abū Masāli.

Dhahrat Sumair (Dahret Simer), an island 13 miles south-south-eastward of the eastern of the Dhahrat Mirāya islets, is fringed by a reef; a rock, with a depth of less than 6 feet (1^m8) over it, a shoal, with a depth of one fathom (1^m8), and a rocky shoal, with a depth of less than 6 feet (1^m8), lie 1½ miles northward, one mile west-north-westward, and 2 miles south-westward, respectively, of Dhahrat Sumair. Several rocky patches lie from 7 to 15 miles south-south-eastward of this island.

Wasaliyat islets, about 15 miles south-westward of Dhahrat Sumair, consist of two low sandy islets lying on a coral bank; these islets were reported, in 1940, to lie 5 miles farther eastward. Two rocks, each with a depth of less than 6 feet (1^m8) over it, lie about 5½ miles north-eastward and 5 miles westward, respectively, of the northern islet; a shoal, with a depth of 2 fathoms (3^m7), lies 3 miles south-south-eastward of the southern islet.

Shi'b al Jumá (*Lat.* 17° 37' N., *Long.* 40° 51' E.), about 5½ miles south-westward of the southern Wasaliyat islet, has depths of less than 6 feet (1^m8) over it.

Charts 8d, 2523.

Chart 8d.

A bank, with a depth of 25 fathoms (45^m7) over it, and a shoal, with a depth of 5 fathoms (9^m1), lie about 10 miles south-westward and 9 miles southward, respectively, of the southern Wasaliyat islet.

Between south-eastward and south-south-eastward of the southern Wasaliyat islet, and distant from 13½ to 38 miles, are several groups of rocky patches, the positions of which can be best seen on the chart.

Farasān bank, farther south-eastward, is described on page 349.

Chart 322.

INNER CHANNEL (continued from page 336).—**Al Qunfidha to Hali point.**—**Islands and dangers.**—From westward of Cox reef the main track of the Inner channel passes eastward of Umm as Saifa, between the Umm al Qamari (Umm ul Komari) islets, between Brook shoal and Cleaver rock, between Backham patches and Shirley reefs, and westward and southward of Hali patches.

Umm as Saifa, which is low, sandy, and covered with bushes, lies on the eastern edge of a coral reef which extends 4 cables southward of it; a spit, with a depth of 3½ fathoms (6^m4) over it, extends about the same distance north-westward of this islet.

Umm al Qamari islets, about 4½ miles south-south-eastward of Umm as Saifa, two in number, lie about 1½ miles apart; they are low, sandy, and covered with bushes, which are about 9 feet (2^m7) high on the western and 18 feet (5^m5) high on the eastern islet; both islets are fringed by a reef. Cullinane reef, about 2½ cables northward of the eastern Umm al Qamari islet, is composed of coral, and is nearly awash.

Several shoals, with a least depth of 2 fathoms (3^m7), lie on the western side of the channel, between Umm as Saifa and Umm al Qamari islets; all these shoals are visible, but some of them have not been closely examined.

Two shoals, with depths of 2½ and 2 fathoms (4^m6 and 3^m7) over them, lie close westward and about 4 cables south-westward, respectively, of the eastern Umm al Qamari islet.

Shi'b ath Thalātha (Shab el Talata), on the eastern side of the fairway, is a chain of three coral reefs which extends about three-quarters of a mile south-south-eastward from a position about 9 cables east-south-eastward of the western Umm al Qamari islet; the two northern reefs have sand cays on them at most seasons of the year.

Shi'b Anda, lying 7 miles south-south-eastward of the southern Shi'b ath Thalātha and about 1½ miles offshore, dries, and has a sand cay, awash at high water, near its northern edge; a chain of coral rocks, with depths of less than 6 feet (1^m8) over them, extends one mile south-south-westward of Shi'b Anda.

Mason reefs, a group of five coral patches on the western side of the Inner channel, with a least depth of 2 feet (0^m6) over their northern end, lie about 6½ miles westward of Shi'b Anda; a shoal, with a depth of 6 fathoms (11^m0), lies 2 miles eastward of Mason reefs, and a shoal, with a depth of 5 fathoms (9^m1), close southward of them.

Pettis reef (*Lat.* 18° 48' N., *Long.* 41° 08' E.), lying on the eastern side of the Inner channel, about 2½ miles south-south-westward of Shi'b Anda, has several large boulders on its eastern edge; shoals, with a least depth of 2 fathoms (3^m7), lie within 5 cables northward, westward, and south-south-westward of this reef.

Charts 8c, 8d, 2523.

Chart 322.

Tully reef, lying about $1\frac{1}{2}$ miles southward of Petty reef, is partly awash at high water; coral heads, with depths of less than 6 feet (1^m8) over them, extend 4 cables north-north-westward of it, and a
 5 2-fathom (3^m7) patch lies 6 cables eastward of it.

Fuller shoal, about one mile south-south-eastward of Tully reef, has a least depth of 2 fathoms (3^m7), mud, over it.

Cleaver rock, $3\frac{1}{2}$ miles south-south-westward of Tully reef, has a least depth of 5 feet (1^m5) over it; Shirley reefs, about half a mile
 10 farther south-south-westward, are a group of coral reefs, which dry in places.

Dubāra islet, lying on Farasān bank, 10 miles westward of Tully reef, is low and sandy and covered with bushes; it is situated about $4\frac{1}{2}$ miles westward of the line of reefs on the western side of the Inner
 15 channel.

Firandiya islets, 4 miles south-south-eastward of Dubāra islet, are two small table-topped rocks lying on the eastern edge of Farasān bank; the eastern edge of Farasān bank is not so clearly defined southward of these islets as it is northward of them.

20 Brook shoal, about $4\frac{1}{2}$ miles east-north-eastward of Firandiya islets, has a least depth of $1\frac{1}{2}$ fathoms (2^m7) over it; between this shoal and Mason reefs are some shoals, with a least depth of 4 fathoms (7^m3). There are also several shoals, which have not been closely examined, between Brook shoal and the eastern edge of Farasān bank.

25 Backham patches, lying about $1\frac{1}{2}$ miles south-westward of Shirley reefs, have a least depth of 5 fathoms (9^m1), coral, over them.

Hunt patches, lying on the north-eastern side of the fairway, about $1\frac{3}{4}$ miles east-south-eastward of Shirley reefs, have a least depth of 3 fathoms (5^m5); these patches are difficult to distinguish owing to
 30 the discolouration of the water in the vicinity.

Jabal Sabāyā, an island lying on the western side of the fairway, about $4\frac{3}{4}$ miles south-south-eastward of the Firandiya islets, is fringed by a reef on its eastern side; there is a small village on the south-eastern side of this island, to a clear area off which a tortuous boat
 35 channel leads through the coastal reef.

Qutū' island (Jezirat Kutna), about $2\frac{1}{2}$ miles south-south-eastward of Jabal Sabāyā, is composed of coral and is low and sandy; it lies on the northern part of a coral reef which extends to as far as 2 miles from its eastern and southern sides; some above-water rocks lie near
 40 the south-eastern end of this reef, and two shoals, with least depths of 4 and 2 fathoms (7^m3 and 3^m7), lie about $1\frac{1}{2}$ and 2 miles, respectively, eastward of these rocks.

The area between Qutū' island and Hadāra island, 9 miles east-south-eastward, has not been recently surveyed, but a broken chain
 45 of reefs and shoals was seen to extend south-eastward across it; north-eastward of this chain the channel appears to be free from dangers.

Hali patches, with a least depth of $6\frac{1}{2}$ fathoms (11^m9), coral and mud, lie about $7\frac{1}{2}$ miles south-south-eastward of Shirley reefs.

50 **Anchorage.**—Vessels with local knowledge can obtain anchorage off Umm as Saifa (*Lat.* 19° 03' N., *Long.* 41° 02' E.) in depths of from 13 to 15 fathoms (23^m8 to 27^m4), good holding ground.

There is good anchorage for small vessels with local knowledge in depths of 9 fathoms (16^m5), mud, with the eastern extremity of the

Chart 322.

eastern Umm al Qamari islet, bearing 198° , distant $2\frac{1}{2}$ cables, and the centre of Cullinane reef in line with Umm as Saifa, bearing 313° .

Vessels with local knowledge can obtain anchorage in depths of 11 fathoms (20^m1), sand and mud, off the eastern side of Pettis reef. 5

Small vessels with local knowledge can obtain sheltered anchorage in depths of 10 feet (3^m0) off the south-eastern side of Jabal Sabāyā, inside the coastal reef.

The Inner channel, southward of Hali point, is continued on page 343. 10

Alternative channel.—Coast.—Dangers.—An alternative track passes north-eastward and eastward of the Umm al Qamari islets, westward of Booth and Salmond patches, northward of Shi'b Anda, and eastward of Pettis and Tully reefs, Fuller shoal, and Hunt and Hali patches; about 9 miles east-south-eastward of the latter patches 15 the track rejoins the main track of the Inner channel. The eastern side of this channel is formed by the coast; the dangers on the western side of the track are described on pages 339-340.

Charts 8c, plan of Kunfida; 322.

Between Al Qunfidha and Ras Makāsir, about 11 miles south-south-eastward, the coast, which is low and fringed by a reef, recedes forming Ghubbat al Qina (Ghubbet el Gena); some white sandhills, about 15 feet (4^m6) high, are situated on the coast about $5\frac{1}{2}$ miles east-south-eastward of Al Qunfidha. See view facing page 344, and view on chart 322. 20 25

Chart 8c, plan of Kunfida.

A chain of reefs extends about 3 miles south-south-eastward of a point on the coast immediately southward of Al Qunfidha; Sawle reef, $2\frac{1}{2}$ miles southward of the same point, is composed of coral and is awash at very low water. 30

Chart 322.

Rouquette reef, about $4\frac{1}{2}$ miles south-south-eastward of the same point, dries; Shi'b Qina (Shab Gena), lying close to the coast and about $2\frac{1}{2}$ miles eastward of Rouquette reef, is a group of coral patches, which dry. 35

Purvis and Nares reefs, both of which dry, lie about $2\frac{1}{2}$ and $1\frac{1}{2}$ miles, respectively, north-north-westward of Ras Makāsir; a detached reef, with a depth of 2 fathoms (3^m7) at its western edge, lies close westward of Nares reef.

Ras Makāsir is the western extremity of a coral reef, which is connected with the coast eastward by a mudflat, which dries; reefs, the outer edges of which are clearly visible, lie about one mile north-westward of Ras Makāsir. 40

From Ras Makāsir the coast trends about $4\frac{1}{2}$ miles south-south-eastward to Ras Abu Matna; it is low and sandy and covered with scrub. 45

Booth patch, lying about $1\frac{1}{2}$ miles south-westward of Ras Makāsir, has a depth of 2 fathoms (3^m7), coral; it is difficult to distinguish.

Salmond patch, which is also difficult to distinguish, has a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, and lies about one mile west-south-westward 50 of Ras Abu Matna (*Lat. $18^{\circ} 53' N.$, Long. $41^{\circ} 09' E.$*).

Ras Abu Matna is fringed by a reef, and a spit, with a depth of $1\frac{1}{2}$ fathoms (2^m7), coral, extends about $1\frac{1}{2}$ miles southward of this point.

Charts 322, 8c, 8d, 2523.

Chart 322.

The coast between Ras Abu Matna and Ras Abu Kalb, $10\frac{1}{2}$ miles south-south-eastward, is low, sandy, and covered with scrub; a reef fringes, in places, this part of the coast.

- 5 Serom, a village off which there is a boat anchorage, is situated about 2 miles north-eastward of Ras Abu Kalb.

Shi'b Aniker extends $1\frac{1}{2}$ miles south-south-westward from a low point 5 miles south-south-eastward of Ras Abu Kalb; it is composed of coral, and its outer edge is usually clearly defined, parts of it being
10 awash at low water.

Hali point, about 4 miles farther south-eastward, is low, and is covered with bushes and clumps of palm trees; a coral reef extends about $1\frac{1}{2}$ miles south-westward of this point, and a sand cay lies on its outer edge, which is steep-to and generally visible; some of the sand-
15 banks off the point dry from 2 to 3 feet (0^m6 to 0^m9) during the summer. The water off this point is usually discoloured, the bottom being soft mud.

Anchorage.—A small bight on the northern side of Ras Makāsir affords good shelter from southerly winds to small vessels with local
20 knowledge.

Vessels with local knowledge can obtain good anchorage in depths of from 5 to 7 fathoms (9^m1 to 12^m8) in the bay eastward of Hali point, well sheltered from northerly and easterly winds.

Directions (continued from page 336).—The track through the
25 Inner channel is shown by a pecked line on the chart.

From a position about 5 cables westward of Cox reef a vessel should steer south-south-eastward towards Umm as Saifa, to within about $1\frac{1}{4}$ miles of that islet, when she should alter course south-eastward to pass about 5 cables eastward of it, thence a south-south-easterly course
30 should be steered to pass $2\frac{1}{2}$ cables eastward of the western Umm al Qamari islet. From this position a southerly course should be shaped to pass 4 cables westward of Shi'b ath Thalātha and 5 cables westward of Shirley reefs; thence a vessel should steer a south-south-easterly course to pass about 6 cables south-westward of Hali patches.

35 If using the alternative channel, the track through which is indicated by a pecked line on the chart, a vessel, from a position about 5 cables westward of Cox reef, should steer south-eastward and pass midway between Cullinane and Purvis reefs, then altering course southward pass between the eastern Umm al Qamari islet and the detached reef
40 close westward of Nares reef, whence a south-south-westerly course should be steered until the western Umm al Qamari islet bears 334° , when a vessel will be westward of Booth patch. A vessel should now steer a south-south-easterly course for about 4 miles when Shi'b Anda should be clearly visible, and an east-south-easterly course can be
45 steered to pass midway between the shoal spit southward of Ras Abu Matna and the northern extremity of Shi'b Anda. Having rounded the north-eastern end of Shi'b Anda a southerly course should be steered to pass one mile westward of Ras Abu Kalb (*Lat.* $18^\circ 43' N.$, *Long.* $41^\circ 12' E.$) and thence alter course south-south-eastward to pass
50 about three-quarters of a mile westward of Shi'b Aniker; after running about 8 miles on this latter course Jabal Tūsi Yamani (*see* view on chart), which is situated about 25 miles south-eastward of Hali point, should bear 127° , and a vessel should steer for it on that bearing, passing about one mile south-westward of the coral reef extending

Charts 8c, 8d, 2523.

Chart 322.

south-westward from Hali point, and about the same distance north-eastward of Hali patches.

The directions for the Inner channel, southward of Hali point, are continued on page 345.

INNER CHANNEL (continued from page 341).—**Hali point to Khasa.**—From southward of Hali point the track passes northward of Denham reef and Freeman shoals, north-eastward of Minto patch and Shi'b 'Amīq (Shab Umek), and eastward of Umm Karkan (Umm Kerkan) shoal and the bank on which Marqa island (Jezirat Marka) lies.

Coast.—Aspect.—From Hali point the coast, which is indented and fringed, in places, by reefs, trends about 22 miles south-south-eastward to Khōr Nahūd (Khor Nohud); about 4 miles north-north-westward of Khōr Nahūd the sandy coast is broken by a conspicuous, dark, flat-topped, rocky point, 30 feet (9^m1) high.

From Khōr Nahūd the coast, which is fringed by reefs, extending to as far as 3 miles offshore, trends about 22 miles south-south-eastward to Khasa (Khisa), a small village.

The trend of the stretch of coast from Khōr Nahūd to Khasa was reported, in 1925 and 1930, to be out of bearing, and the coast in the vicinity of Jabal Wasm, about 4½ miles north-north-westward of Khasa, to lie about 2 miles farther eastward than charted.

About 7 miles south-eastward of Hali point is Jahfuf bay and about 3½ miles farther southward is Khōr 'Amīq (Khor Umek); the latter inlet is formed by a sandy point (*Lat. 18° 28' N., Long. 41° 24' E.*) extending southward, which can be identified by the gap which it forms in the mangroves which border the coast.

Khōr Nahūd is divided into two parts by a projection extending southward; its shores are low and sandy.

Khōr al Birk, 1½ miles southward of Khōr Nahūd, is divided from it by a promontory.

Jabal Hali, 2,354 feet (717^m5) high, 23 miles north-eastward of Hali point, appears pyramidal in shape from Al Qunfidha and northward of it, but southward of Al Qunfidha its appearance quickly alters, and from Shi'b Anda it shows as an oblong mountain, with its northern part rounded off abruptly.

The mountain range converges towards the coast in the vicinity of Khōr Nahūd and Khōr al Birk. Two of these peaks, Jabal Tūsi Shāmi (Jebel Tusi Sham), 6½ miles north-eastward of the head of Khōr Nahūd, and Jabal Tūsi Yamani, are larger than the others; from Khōr al Birk they appear to be the northern part of the range and may be identified by a detached summit southward. Jabal Tūsi Yamani is likely to be mistaken for Jabal Tūsi Shāmi, and the detached summit southward for Jabal Tūsi Yamani.

See views facing pages 344 and 345, and views on chart.

Jabal Wasm, a steep hill, is situated on the coast, on a peninsula which separates the northern Khōr Wasm from the southern Khōr Wasm; on south-easterly and easterly bearings it has the appearance of a round hill with a peak on its northern slope, but on north-easterly bearings it appears pointed. A flat-topped steep hill, 720 feet (219^m5) high, is situated about 2½ miles east-south-eastward of it, and Jabal "N", about 4 miles farther eastward, is also steep and is conspicuous;

Chart 322.

these two hills, when in line, bearing about 090°, lead, from the Inner channel, clear of all dangers, towards the peninsula separating the northern Khōr Wasm from the southern inlet of the same name. See view facing page 345.

Islands and dangers.—Hadāra island, 10½ miles south-south-westward of Hali point, lies near the northern end of a reef, which extends 6 miles south-eastward of this island, and has depths of less than 6 feet (1^m8) over it; Barton islet (*Lat. 18° 23' N., Long. 41° 16' E.*) lies on this reef, about 3 miles south-eastward of Hadāra island. Both these islands are low, sandy, and covered with bushes; a shoal, with a depth of one fathom (1^m8), lies about 4 miles eastward of Barton islet.

The area between Hadāra and Qutū' islands is described on page 340; a chain of coral reefs extends from Hadāra island eastward to within about 2½ miles of the coast.

Qad Hadāra, about one mile north-eastward of Hadāra island, dries in places, and there is a sand cay on its north-eastern side.

Denham reef, about 1½ miles east-north-eastward of Qad Hadāra, dries in places; there are two sand cays on this reef.

Between Qad Hadāra and Denham reef are some rocks and shoals. Freeman shoals, lying from about 2 to 4 miles eastward of Denham reef, have depths of less than 6 feet (1^m8), and are difficult to distinguish except under exceptionally favourable conditions.

Minto patch, with a depth of 4 fathoms (7^m3), coral, lies 2½ miles west-south-westward of the western entrance point of Khōr 'Amīq; Shi'b 'Amīq, about half a mile south-south-westward of Minto patch, dries in places.

A coral spit, with depths of less than 6 feet (1^m8) over it, extends 1½ miles southward of the western entrance point of Khōr 'Amīq.

Odin shoal, with a depth of 3 fathoms (5^m5) over it, lies 2 miles southward of the western entrance point of Khōr 'Amīq, and is not easily seen except under very favourable circumstances; a shoal, with a depth of 2 fathoms (3^m7), lies between Odin shoal and the coastal reef south-eastward.

Umm Karkan shoal, the northern end of which is situated 2½ miles south-eastward of Shi'b 'Amīq, extends 4½ miles southward; its northern part is awash and clearly visible; the eastern edge of this shoal is steep-to and can be clearly seen.

Charts 8d, plan of Khor Nohūd; 322.

Both parts of Khōr Nahūd are almost filled with the coastal reef, which extends about one mile south-south-eastward of the western entrance point.

Chart 322.

The shores of Khōr al Birk are fringed by reefs, which extend 1½ miles south-westward and 2½ miles south-south-westward, respectively, of its northern and southern entrance points.

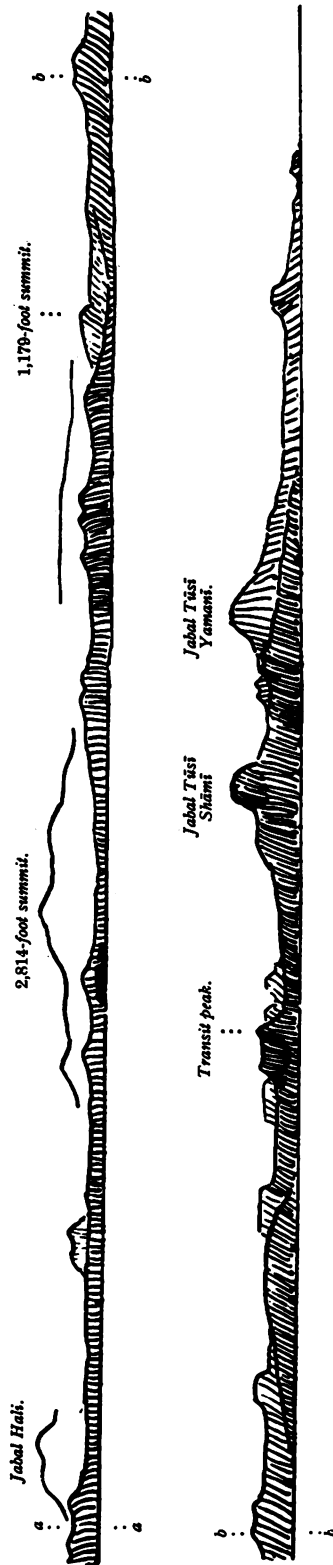
Marqa island, about 9 miles south-south-eastward of Barton islet, lies on a reef which has depths of less than 6 feet (1^m8) over it; this reef is connected eastward with an extensive bank extending 13½ miles in a northerly and southerly direction, and on which there are several shoals. The dangers westward of the southern part of this bank are mentioned on page 338.

Al Gharif (Gherif) bank, the northern end of which lies about 6½ miles

Charts 8d, 2523.

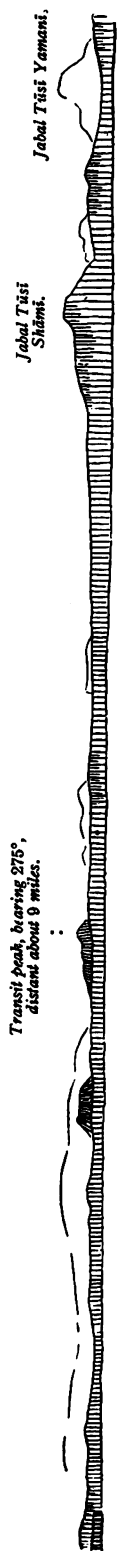


Coast southward of Al Qunfidha.

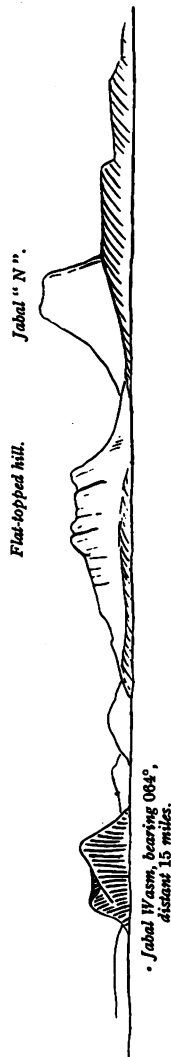


View, in three parts, of coast southward of Hali point.

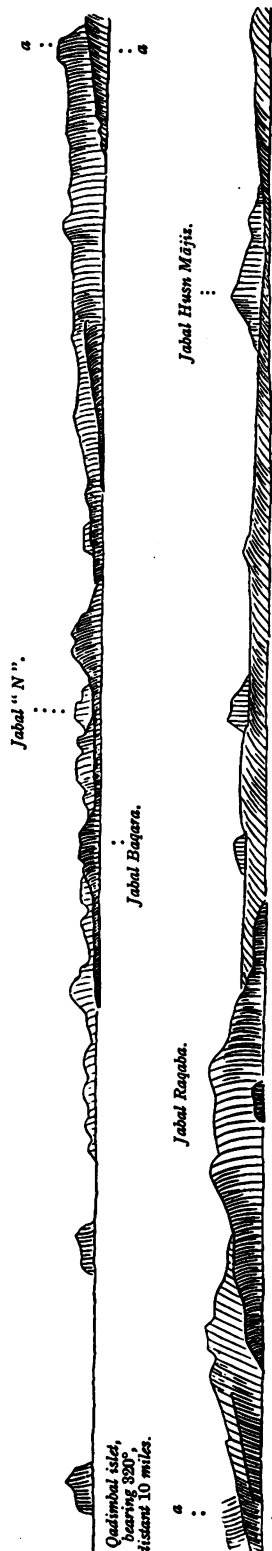
(Originals dated 1888.)



Coast southward of Hali point.



South-western approach to Khôr Wasm.



View, in two parts, of coast south-eastward of Khôr Wasm.



Sumair island, bearing 180°, distant 7 miles.

(Originals dated 1033.)

Chart 322.

south-south-eastward of Qutū' island, extends $8\frac{1}{2}$ miles southward, and has depths of less than 6 feet (1^m8) over it.

Hasr islet, lying on the coastal reef about $3\frac{1}{2}$ miles southward of the southern entrance point of Khōr al Birk, is low and wooded. 5

Jabal (Abū l Mahlef) islet, lying close offshore on the coastal reef, $2\frac{1}{2}$ miles south-eastward of Hasr islet (*Lat.* $18^\circ 09' N.$, *Long.* $41^\circ 29' E.$), is conical-shaped.

Two above-water rocks lie close offshore, on the coastal reef, about $1\frac{1}{4}$ miles west-north-westward of the northern entrance point of the northern Khōr Wasm; there is a bar of sand across the entrance to this inlet. 10

Anchorage.—Jahfuf bay affords good anchorage in depths of from 5 to 10 fathoms (9^m1 to 18^m3), sheltered from northerly and easterly winds. 15

Small vessels with local knowledge can obtain good shelter eastward of the coral spit extending southward of the western entrance point of Khōr 'Amīq.

Chart 8d, plan of Khor Nohūd.

Khōr Nahūd affords good anchorage to vessels with local knowledge in depths of about 7 fathoms (12^m8). 20

Chart 322.

Khōr al Birk affords sheltered anchorage in depths of $6\frac{1}{2}$ fathoms (11^m9), mud, to small vessels with local knowledge; anchorage can also be obtained in the entrance to this inlet. The passage into Khōr al Birk is reported to be tortuous and narrow. 25

The inlet on the eastern side of the reef extending south-south-westward of the southern entrance point of Khōr al Birk affords shelter to small vessels with local knowledge.

Anchorage has been obtained, in a depth of 7 fathoms (12^m8), on the bank eastward of Marqa island, about 3 miles westward of Khōr Nahūd. 30

Anchorage has been obtained in depths of from 7 to 8 fathoms (12^m8 to 14^m6), on the detached bank westward of the southern extremity of Hasr islet. 35

There is anchorage in depths of about 6 fathoms (11^m0) in an inlet formed by the coastal reef between Hasr and Jabal islets, but it was reported, in 1930, that the depths here were less than those charted.

Both the northern and southern Khōr Wasm afford good sheltered anchorage to small vessels with local knowledge; anchorage in depths of 11 fathoms (20^m1) has also been obtained off the entrance to the northern of these inlets. 40

The Inner channel, south-eastward of Khasa, is continued on page 346.

Directions (continued from page 343).—From a position about 6 cables south-westward of Hali patches, when Transit peak, which is situated $3\frac{1}{4}$ miles north-north-westward of Jabal Tūsi Shāmī (see views facing page 344 and this page, and view on chart), bears 107° , a vessel should steer for it on that bearing to within about $3\frac{1}{2}$ miles of the coast; she should then alter course south-south-eastward and pass about 5 cables eastward of Minto patch, 4 cables westward of Odin shoal, and 4 cables eastward of the north-eastern extremity of Umm Karkan shoal, whence a mid-channel course should be steered between this shoal and the coast. 50

Charts 322, 8d, 2523.

Chart 322.

From a position eastward of the southern end of Umm Karkan shoal a vessel should continue southward between the coastal reef and the bank eastward of Marqa island.

- 5 The directions for the Inner channel, south-eastward of Khasa (Lat. $17^{\circ} 57' N.$, Long. $41^{\circ} 38' E.$), are continued on page 349.

Charts 322, 8d.

- INNER CHANNEL** (continued from page 345).—**Khasa to Ras Turfa.**—The Inner channel, south-eastward of Khasa, lies between
10 the eastern edge of Farasān bank, on the west, and the islands and dangers off-lying the coast, on the east. It passes between Qadimbal (Kotunbul) islet and the patch of discoloured water 5 miles westward of it, north-eastward of Mamālī Kabīr and Mamālī Seghīr, eastward of Firān islet, and between Shaira islet and the peninsula, of which Ras
15 Turfa is the southern extremity.

Coast.—Aspect.—From Khasa the coast trends 45 miles south-eastward to Shī'b Abu al Liqā (Shab Abū-l luká) and thence 28 miles southward to Ras Turfa.

- Jabal Baqara (Jebel Bakara), close to the coast about 6 miles south-
20 eastward of Khasa, is a parti-coloured hill with dark lava on its northern and western slopes and a white sandy slope on its southern side ; it is conspicuous on northerly bearings.

- Widān, about one mile southward of Jabal Baqara, is a village on the shores of a small bight formed by a narrow neck of land extending
25 westward and northward from the coast ; from westward this neck of land has the appearance of an island ; Jabal Widān is situated about $4\frac{1}{2}$ miles east-north-eastward of Jabal Baqara, and Jabal Raqaba (Jebel Rakab el Kudain), on the coast, about 4 miles southward of Jabal Widān.

30 *Chart 8d.*

Jabal Husn Mājiz (Husna-l Majis), rising from the coast, about 5 miles eastward of Jabal Raqaba, is steep on its northern side, and has a fort on its summit ; Khōr al Makra is a small break in the coastal reef, on the south-western side of Jabal Husn Mājiz.

- 35 See view facing page 345.

Majiz (Majis) and Qutuf al Misri (Kutuf el Misri) are two villages on the coast situated about 5 and 8 miles, respectively, south-eastward of Khōr al Makra.

- A reef, extending to as far as one mile offshore, fringes the coast
40 between Khōr al Makra and Qutuf al Misri.

- Ash Shuqaiq Rukba (Shukeik Rukbe) is a large village about 3 miles east-south-eastward of Qutuf al Misri, with fertile country around ; the coast north-westward of this village has some low sandhills on it. The coast in the vicinity of Ash Shuqaiq Rukba was reported, in
45 1928, to lie about 3 miles farther north-eastward than it is charted.

Kiyās is a village on the coast about 3 miles south-south-eastward of Ash Shuqaiq Rukba.

- Jabal 'Itwad (Jebel Etwid), situated about 12 miles eastward of Kiyās, is a conspicuous peak, as it appears to be unconnected with the
50 range of hills in the vicinity and to be much nearer the coast.

Khōr 'Itwad (El Etwid Khor) is a small inlet about 8 miles south-eastward of Kiyās ; Al Darb (Lat. $17^{\circ} 33' N.$, Long. $42^{\circ} 12' E.$) is a large village 4 miles eastward of this inlet.

Charts 8d, 2523.

Chart 8d.

Shi'b Abu al Liqā is the name given to the reef which fringes the coast for a distance of $5\frac{1}{2}$ miles south-eastward from a position $3\frac{1}{2}$ miles south-eastward of the entrance to Khōr 'Itwad; it extends to as far as about half a mile offshore.

Shi'b al Kabīr (Shab el Kebir) fringes the coast from 3 miles south-eastward of the south-eastern end of Shi'b Abu al Liqā for a distance of about 9 miles southward; this reef extends to as far as $1\frac{1}{2}$ miles offshore.

Charts 15, 8d.

Ras Turfa is the southern extremity of a narrow strip of low land, covered with bushes, which forms the western side of Khōr Abu as Sab'a; it is fringed by a reef which extends about three-quarters of a mile westward and a quarter of a mile southward of it.

Khōr Abu as Sab'a is encumbered with shoals for a distance of about 8 miles from its head, and the eastern shore of this inlet is foul throughout its length. A point, which is steep-to, is situated $1\frac{1}{2}$ miles northward of Ras Turfa; on the western side of this point is a small inlet, and about half a mile north-westward of it lies a bushy islet.

Chart 322.

Islands and dangers.—Qadimbal islet, lying $2\frac{1}{2}$ miles southward of Khasha and $1\frac{1}{2}$ miles offshore, is of volcanic formation and rises to a rugged small wedge-shaped peak; the northern side of this peak, which is the only accessible part, is steep; the eastern side forms a steep slope and the southern and western sides fall vertically. A reef extends about half a mile south-south-westward of Qadimbal islet, and a rock, with a depth of less than 6 feet (1^m8) over it, lies about $3\frac{1}{2}$ miles north-north-eastward of the islet; a shoal, with a depth of $1\frac{1}{2}$ fathoms (2^m7), sand and mud, which is not visible, and a patch of discoloured water, lie about half a mile eastward and 5 miles westward, respectively, of this islet.

Chart 8d.

Sumair (Simer) island (*see* view facing page 345), lying 15 miles west-south-westward of Qadimbal islet, is low, and is composed of coral and sand. A bank, on which there are some shoals with a least known depth of 3 fathoms (5^m5), extends 5 miles northward from a position one mile north-eastward of this island; a rock, with a depth of less than 6 feet (1^m8) over it, lies about one mile westward from the middle of its western side, and a similar rock lies about 2 miles east-south-eastward of its north-eastern extremity. A shoal, with a depth of 3 fathoms (5^m5), lies about 4 miles south-south-westward of Sumair island, and a shoal, with a depth of 4 fathoms (7^m3), about $1\frac{1}{2}$ miles eastward of the former shoal; a rock, with depths of less than 6 feet (1^m8), lies about $2\frac{1}{2}$ miles south-eastward of this island, and a similar rock about one mile farther southward.

A rock, with a depth of less than 6 feet (1^m8) over it, lies about 3 miles southward of Qadimbal islet.

A reef, with depths of less than 6 feet (1^m8) over it, lies 10 miles south-south-westward of Qadimbal islet (*Lat.* $17^\circ 54' N.$, *Long.* $41^\circ 38' E.$), and a rock, with a depth of less than 6 feet (1^m8), lies one mile east-south-eastward of this reef; a shoal, with a depth of 4 fathoms (7^m3), lies about $1\frac{1}{2}$ miles south-south-westward of this rock.

A patch of discoloured water lies 5 miles south-westward of Khōr al Makra.

Charts 8d, 2523.

Chart 8d.

Mamāli Kabīr, a bank with depths of less than 6 feet (1^m8) over it, lies with its northern extremity 12½ miles south-westward of Khōr al Makra, and extends about 8½ miles south-eastward.

- 5 A reef, with depths of less than 6 feet (1^m8) over it, lies about 1½ miles westward of Kiyās, and a shoal, with a depth of 4 fathoms (7^m3), about one mile farther westward.

- Shoals, with depths of one and 4 fathoms (1^m8 and 7^m3) over them, lie about 2½ and 4 miles, respectively, west-north-westward of the entrance to Khōr 'Itwad; a reef, with depths of less than 6 feet (1^m8), lies about three-quarters of a mile south-westward of the south-eastern entrance point of this inlet.

- A shoal, with a depth of 4 fathoms (7^m3) over it, the position of which is approximate, was reported, in 1916, to lie near the recommended track and about 6 miles south-south-westward of the entrance to Khōr 'Itwad; shoal water may extend some distance from this shoal.

- Mamāli Saghīr, a coral reef, over which the sea breaks in places, lies with its northern extremity about 20 miles south-south-westward of the entrance to Khōr al Makra, and extends 10 miles south-south-eastward; Matbakhain rock, standing at the northern end of this reef, is a good mark. A shoal, with a depth of 3 fathoms (5^m5) over it, lies 12½ miles east-south-eastward of Matbakhain rock; rocks, with depths of less than 6 feet (1^m8), lie from 3½ to 5 miles eastward of the southern extremity of Mamāli Saghīr, and a similar rock about one mile southward of the same point.

- A bank, with depths of less than 6 feet (1^m8) over it, lies about 17 miles south-westward of Shi'b Abu al Liqā, and another small rocky bank about 1½ miles east-south-eastward of the former bank; a shoal, with a depth of 2 fathoms (3^m7), lies about 1½ miles east-north-eastward of this latter bank.

- Firān islet, lying about 14 miles north-westward of Ras Turfa and 7 miles offshore, is covered with trees and bushes, its highest part forming a steep bluff westward; a detached rock, with a depth of less than 6 feet (1^m8) over it, lies close south-eastward of its south-eastern end.

- North Ghūrab (North Ghorab) islet, about 8½ miles west-south-westward of Firān islet, lies near the western end of a sand and mud bank which has a least depth of 6 fathoms (11^m0) over it; a small black rock lies about 3 cables north-westward of the northern extremity of North Ghūrab islet.

Shaira islet, 4 miles west-north-westward of Ras Turfa, is about 20 feet (6^m1) high, sandy, and covered with bushes; it lies at the south-eastern end of a shallow bank of rocks and sand, which extends 6½ miles west-north-westward of it.

- 45 **Anchorage.**—There is anchorage in the bight at Widān (*Lat.* 17° 51' N., *Long.* 41° 43' E.) in depths of from 3 to 4 fathoms (5^m5 to 7^m3), but it is only sheltered from southerly winds.

- Anchorage can be obtained by vessels with local knowledge, on the bank north-eastward of Sumair island, or off the western side of this bank.

Small vessels with local knowledge can obtain anchorage about 2 miles south-westward of Qutuf al Misri.

- There is anchorage for small vessels with local knowledge off Ash Shuqaiq Rukba; the coast here is suitable for landing but is somewhat exposed.

Chart 2523.

Chart 8d.

There is generally anchorage all along the coast from Widān to a position about 18 miles southward of the south-eastern end of Shi'b Abu al Liqā; in this district there are reported to be many villages a few miles inland.

5

Charts 15, 8d.

Anchorage can be obtained by vessels with local knowledge in depths of from 4 to 8 fathoms (7^m3 to 14^m6), in the outer part of Khōr Abu as Sab'a, southward of the bar.

There is good anchorage for small vessels with local knowledge in the small inlet on the western side of Khōr Abu as Sab'a, about $1\frac{1}{2}$ miles northward of Ras Turfa.

The Inner channel, southward of Ras Turfa, is continued on page 362.

Charts 322, 8d.

15

Directions (continued from page 346).—From a position eastward of the southern end of the bank eastward of Marqa island, a vessel should steer to pass about 3 miles south-westward of Qadimbal islet, 2 miles south-westward of the patch of discoloured water 5 miles south-westward of Khōr al Makra, and $3\frac{1}{2}$ miles south-westward of the reef three-quarters of a mile south-westward of Khōr 'Itwad, taking care to avoid the shoal, with a depth of 4 fathoms (7^m3) over it, 6 miles south-south-westward of the entrance to this latter inlet. A vessel should now alter course southward and pass about midway between Shaira islet and Ras Turfa.

25

Charts 15, 8d.

A vessel proceeding to an anchorage in Khōr Abu as Sab'a may pass round either end of Farāfir (Ferafer) island, which lies 2 miles east-south-eastward of Ras Turfa.

The directions for the Inner channel, southward of Ras Turfa, are continued on page 366.

FARASĀN BANK (continued from page 339).—**Shi'b Farasān.**—

Caution.—Chart 15 should be used with the utmost caution. The areas inside the danger lines are practically unexamined, and it is advisable to keep as far as possible to the tracks indicated on the chart by pecked lines.

35

Shi'b Farasān, lying from about 6 to 10 miles within the western edge of Farasān bank, with its north-western extremity about 40 miles south-south-eastward of the southern Wasaliyat islet, extends 57 miles south-eastward to Pearly Gates; there are numerous islands and shoals on this reef and no navigable channel across it is known to exist. There is a deep channel between it and the Farasān islands (*Lat.* $16^{\circ} 49' N.$, *Long.* $41^{\circ} 51' E.$), which lie from 2 to 5 miles north-eastward.

40

Sail Makawa (Seil Makawa) island, $9\frac{1}{2}$ miles south-eastward of the north-western extremity of Shi'b Farasān, lies on the northern part of a coral reef which extends about 2 miles south-south-eastward of it; a bank, with depths of 4 fathoms (7^m3) at its eastern edge, extends about $1\frac{1}{2}$ miles eastward of the southern part of this coral reef. Several rocks and shoals, the positions of which can best be seen on the charts, lie on Shi'b Farasān, north-westward of Sail Makawa island.

50

Chart 15.

Dhī Dhahāyā island, 4 miles south-south-eastward of Sail Makawa island, and Hanish islet, about half a mile farther south-eastward,

Charts 8b, 2523.

N

Chart 15.

are both low and sandy, and lie at the south-western end of a bank, with a least depth of one fathom (1^m8) over it, which extends 2 miles east-north-eastward of Dhī Dhahāyā island.

- 5 Sarad Sarso (Sarso) island lies with its northern extremity about 6 miles eastward of Dhī Dhahāyā island, and Sarso (Sindi Sarso) island lies about one mile east-north-eastward of Sarad Sarso island; these two islands, which lie on the eastern edge of Shi'b Farasān; are of coral formation, with sharp points of coral showing above the surface of the south-western island. A shoal, with a least depth of 3 fathoms (5^m5) over it, lies 3½ miles northward of Sarad Sarso island, and another shoal, with a depth of 3 fathoms (5^m5), about 2 miles westward of the northern extremity of this island.

- A sandy island lies about 2½ miles south-westward of the middle of 15 Sarad Sarso island, and two sandy islets lie about 2½ miles farther south-westward; the depths are shallow in their vicinity.

- Shuma island lies about 9 miles southward of Sarad Sarso island, and Stewart islets, on the north-eastern edge of Shi'b Farasān, about 6½ miles eastward of Shuma island; two islets, the positions of which 20 are doubtful, lie from about 5 to 7 miles south-eastward of Stewart islets, and another islet lies on a shallow bank, about 2 miles farther south-eastward; a detached rock, with a depth of less than 6 feet (1^m8) over it, lies 1½ miles north-eastward of this latter islet.

- A shallow bank, the north-western end of which is situated about 25 14 miles south-eastward of the Stewart islets, extends about 5½ miles south-south-eastward; Cayte islet, Tawāsila (Towāsela) islet, and Marrāq (Marrāk) island lie on this bank; Marrāq island, the south-easternmost island on Shi'b Farasān, is low and ill defined.

Between Dhī Dhahāyā and Marrāq islands are many shoals.

- 30 Mahama and Umm az Zahil islets lie 4 miles, respectively, north-eastward and east-north-eastward of Marrāq island.

Charts 15, 8d.

- Farasān islands.**—The Farasān islands are a group containing the largest islands on the eastern side of the Red sea; the two largest, 35 Farasān Kabīr and Segīd, are practically one island, being connected by a very shallow spit extending southward from the south-eastern end of Segīd.

- Farasān Kabīr and Segīd are hilly, with plains and valleys; the hills are formed of coral rock, the most conspicuous being Jabal al 40 Qasr (Kasr), a small round hill on the eastern side of Farasān Kabīr (*Lat. 16° 39' N., Long. 42° 07' E.*); Jabal Shidda (Skidda), a conspicuous bluff 4½ miles west-south-westward of Jabal al Qasr, is wedge-shaped on some bearings, but on northerly bearings has the appearance of a hummock with a peak in the middle.

- 45 **North-western islands of group.**—**Dangers.**—**Beacon.**—Matrahain (Matraheīn) islet, 15½ miles west-north-westward of Ras Rāsib, the northern extremity of Segīd, is formed by a small group of rocks.

- Jabal Muhammad (Jebel Momed) island, about 9 miles south-eastward of Matrahain islet, consists of sand and coral, and rises at its 50 eastern part in a high wedge-shaped hill; a bank, with a least depth of 3 fathoms (5^m5) over it, extends 2½ miles north-north-westward of this island. Patches, with a least depth of 2 fathoms (3^m7), lie within about 2½ miles north-north-eastward, north-eastward, and eastward of Jabal Muhammad island.

Charts 8d, 2523.

Charts 15, 8d.

Mudhan islet, $7\frac{1}{2}$ miles south-south-westward of Matrahain islet, is rocky, and is fringed by a reef; an iron beacon, about 40 feet (12^m2) in height, which was reported, in 1934, to have been destroyed, stands on the centre of this islet. A reef, with depths of less than 6 feet (1^m8) over it, lies about one mile northward of Mudhan islet. 5

Wishka islet, $5\frac{1}{2}$ miles east-south-eastward of Mudhan islet, is composed of sand and coral, and is fringed by a reef, on which are some above-water rocks; it lies at the south-western end of a bank which extends about 12 miles northward of it and on which are some patches, 10 with a least depth of 2 fathoms (3^m7). A reef, with depths of less than 6 feet (1^m8) over it, the position of which is approximate, lies about 14 miles north-north-eastward of Wishka islet.

Chart 15.

Disan island, about 3 miles south-south-eastward of Wishka islet, 15 is flat, rising gradually towards the centre; the north-eastern side of the island is rocky with one or two conspicuous sandy patches about one mile from its northern extremity; Jabal Disan, about $1\frac{1}{4}$ miles northward of the southern extremity of this island, is a conspicuous hummock, and there is a cairn on the southern end of the island. 20 Safan islet, composed of coral, lies about three-quarters of a mile northward of Disan island.

A shoal bank, on which are some islets, connects Disan island with Ras Farasān, the north-western extremity of Farasān Kabīr; a conspicuous rock lies about 4 cables from the south-western side of Disan 25 island. A detached rock, with a depth of less than 6 feet (1^m8) over it, the position of which is approximate, lies about $2\frac{1}{4}$ miles east-south-eastward of the northern extremity of Disan island, and a reef, with depths of less than 6 feet (1^m8), $3\frac{1}{4}$ miles farther south-eastward.

West Mandhar island lies on the southern part of the bank extending 30 about $7\frac{1}{2}$ miles westward from Ras Rāsib; several low coral islets lie within $2\frac{1}{4}$ miles north-westward of this island, and there is an islet close off its eastern extremity; a reef, with depths of less than 6 feet (1^m8) over it, lies at the western edge of the bank, about 3 miles west-north-westward of West Mandhar island. 35

Charts 15, 8d.

A bank, on which lie numerous rocky islets, extends about 6 miles north-eastward of the northern part of the eastern coast of Segīd (Lat. $16^\circ 52' N.$, Long. $41^\circ 54' E.$), and thence trends about 17 miles north-westward; 'Akbaīn (Jezirat Akbeīn) islet, about 5 miles north- 40 eastward of Ras Rāsib, is the largest of these islets; Sair 'Abd (Seil Abadho) islet, about 9 miles eastward of Ras Rāsib, is a small, round, mushroom-shaped, coral rock, about 20 feet (6^m1) high. There are several patches, with a least depth of 3 fathoms (5^m5), on the north-western arm of this bank. 45

Chart 8d.

A shoal, with a depth of 5 fathoms (9^m1) over it, the position of which is approximate, lies about 8 miles northward of 'Akbaīn islet, and a reef, with depths of less than 6 feet (1^m8), the position of which is also approximate, about 2 miles south-eastward of this shoal. 50

Chart 15.

Anchorage.—There appears to be good anchorage for small vessels with local knowledge, sheltered from northerly winds, in the channel between Disan island and Safan islet.

Chart 212, plan of Abtein anchorage.

Abtain (Abtein) bay, on the north-eastern side of Disan island, affords anchorage, sheltered from southerly winds, to vessels with local knowledge; it was reported, in 1930, that the holding ground is poor, and that the bay is foul; a shoal, with a depth of 3 fathoms (5^m5) over it, lies about 1½ cables offshore. Anchorage has been obtained in a depth of 25 fathoms (45^m7), 3 cables offshore, with the western sand patch on the north-eastern side of Disan island bearing 151°.

10 *Chart 15.*

Islands and dangers south-westward of Farasān Kabīr.—

Beacons.—Kaira (Keira) island, about 6½ miles southward of Ras Farasān and one mile from the south-western side of Farasān Kabīr, is wooded and rather high; it lies at the south-eastern end of a bank, with a least depth of one fathom (1^m8) over it, and which extends 3½ miles west-north-westward of the island.

Charts 212, plan of Zifaf anchorage; 15.

Dhā al Faif (Zifaf) island, about 2½ miles southward of Kaira island, is conspicuous; the north-eastern side of the island is indented by a cove, and there is a conspicuous sandspit eastward of the 100-foot (30^m5) hill 9 cables north-north-westward of the south-eastern end of the island, also a conspicuous white cliff about 1½ miles farther west-north-westward. This island lies near the north-western end of a bank, which extends about 3½ miles south-eastward of it, and on the southern part of this bank lie Sair Haggar (Seir Haggar Zifaf) islet, Dushuk island, and a few above-water rocks.

Chart 212, plan of Zifaf anchorage.

Doewa reef, with a least depth of one fathom (1^m8) over it, lies about one mile east-south-eastward of the entrance to the cove indenting the north-eastern side of Dhā al Faif island. This cove is approached between the north-western end of Doewa reef and the shallow bank extending about 4 cables south-eastward of the north-eastern entrance point of the cove; the south-eastern edge of this shallow bank is marked by a beacon, as is the rock awash 3 cables southward of the same entrance point (*Lat. 16° 42' N., Long. 41° 47' E.*). Two beacons stand close southward and westward, respectively, of an above-water rock lying about 4 cables westward of the beacon marking the rock awash.

Chart 15.

40 Dushuk island is high and of coral formation.

Akbar 'Uqa (Akbar Ageili) island, about 1½ miles east-south-eastward of Dushuk island, is a high bare coral island surrounded by a reef.

Salūba and Dumsuq (Dumsuk) islands lie near the north-western and south-eastern ends, respectively, of a shallow bank, the north-western end of which is situated about 2½ miles east-south-eastward of Akbar 'Uqa island, and extends about 8 miles south-eastward; both these islands are high, Salūba island being composed of coral; an above-water rock lies about half a mile from the south-eastern side of Salūba island. A narrow inlet almost divides Dumsuq island into two. Southward and south-eastward of Dumsuq island are several banks and shoals, the positions of which can best be seen on the chart; a shoal, with a depth of 3 fathoms (5^m5) over it, lies 4½ miles eastward of the north-eastern extremity of this island.

Charts 15, 8d, 2523.

Charts 212, plan of Kumh anchorage; 15.

Kumh island, $1\frac{1}{2}$ miles north-eastward of Salūba island, is steep-to on its eastern and southern sides, but its north-western side is connected with Farasān Kabīr by a shallow bank; this bank extends about 3 cables south-westward of the south-western point of the island, and is marked near its south-western edge by a beacon, consisting of a tripod, surmounted by a cylinder. A peak, about 90 feet (27^m4) high, stands out well on the western side of the inlet indenting the southern side of the island. A bank, with a depth of 9 fathoms (16^m5) over it, lies about three-quarters of a mile west-south-westward of the southern extremity of Kumh island. 6 10

The shores of this inlet are rocky and steep-to for about one mile within its entrance; on the western side of the inlet, about $6\frac{1}{2}$ cables northward of Black point, the western entrance point, is a shallow bay, the northern entrance point of which is formed by a series of 15 peculiar rocks and, when bearing 342° , is a good landmark for entering the inlet.

Chart 15.

Anchorage.—Anchorage has been obtained in depths of 10 fathoms (18^m3), 2 cables northward of the northern extremity of Dhā al Faif 20 island.

Chart 212, plan of Zifaf anchorage.

Anchorage can be obtained in depths of less than 20 fathoms (36^m6) westward and north-westward of Doewa reef.

Chart 212, plan of Kumh anchorage.

Good anchorage can be obtained in depths of from 8 to 9 fathoms (14^m6 to 16^m5) in the inlet on the southern side of Kumh island, with Sagg point, which is situated one mile north-north-westward of Slick point, the eastern entrance point, bearing 071° . 25 30

Chart 15.

Segīd.—**Islets and dangers.**—Segīd, the northern of the two larger islands of the Farasān group (*Lat.* $16^\circ 52' N.$, *Long.* $41^\circ 54' E.$), lies partly in a bight formed by the northern side of Farasān Kabīr. 30

A narrow promontory, which is fronted on both sides by several 35 islets, extends northward and west-north-westward from the northern part of Segīd, terminating in Ras Rāsib.

Jabal al Erga, on the north-eastern slope of which stands Khatīb (Khotib) village, is situated on the west coast of the island $8\frac{1}{2}$ miles southward of Ras Rāsib. 40

Khōr Segīd is an inlet on the eastern side of this island, with a grove of date trees and the village of Segīd situated on its north-western shore; the houses of this village are mostly built of coral and are in ruins. It is entered northward of East Mandhar island, which lies $13\frac{1}{2}$ miles south-eastward of Ras Rāsib. 45

A coral reef fringes the shores of Khōr Segīd, extending about half a mile southward from the northern side, just within the entrance; Duff islet lies about half a mile southward of the northern entrance point, and a rock, with a depth of less than 6 feet (1^m8) over it, lies about a quarter of a mile south-westward of this islet. 50

East Mandhar island, composed of coral, lies on the northern edge of the coastal reef bordering the south-eastern side of Segīd; it is fringed by a reef on its eastern, northern, and western sides, and a shoal, with a depth of 3 fathoms (5^m5) over it, lies close off the northern

Chart 15.

side of this island, about 2 miles westward of its north-eastern point. Jabal Mandhar rises at the eastern end of the island.

Dhāhik (Dhabik) islet, $6\frac{1}{4}$ miles north-eastward of East Mandhar island, is composed of coral; a shoal, the position of which is approximate, was reported, in 1927, to lie about $3\frac{1}{2}$ miles north-north-eastward of Dhāhik islet, and another shoal, the position of which is also approximate, was reported, in 1931, to lie about $2\frac{1}{2}$ miles westward of the same islet.

10 A rock, with a depth of less than 6 feet (1^m8) over it, and a shoal, with a depth of 4 fathoms (7^m3), lie about $3\frac{1}{2}$ and $3\frac{1}{4}$ miles, respectively, west-south-westward of Dhāhik islet.

Anchorage.—Directions.—Khōr Segīd affords good anchorage to vessels with local knowledge, completely sheltered from wind and sea, 15 in depths of about 12 fathoms (21^m9).

At the western end of this inlet there is a small opening in the coral reef, about 18 yards (16^m5) wide; the southern edge of the date grove, bearing 294°, leads into this opening.

A vessel bound for Khōr Segīd from Jizān (Gizān), about 31 miles 20 eastward of East Mandhar island, should follow the track indicated by a pecked line on the chart, and pass $1\frac{1}{2}$ miles northward of Abu Shugur (Abū Shukar) islet, which lies about midway between Jizān and East Mandhar island, thence about 3 cables northward of Dhāhik islet, whence a south-westerly course should be steered towards the western 25 end of East Mandhar island, passing between the dangers westward and west-south-westward of Dhāhik islet, on the north-western side, and the spit, with a least depth of 2 fathoms (3^m7) over it, extending three-quarters of a mile westward of the north-eastern extremity of the coral reef on the eastern side of the entrance to Al Qabr (Gabr), 30 on the south-eastern side. When Sail Sherra Kabīr (Seil Sherra Kabir) islet, lying about $1\frac{1}{4}$ miles eastward of East Mandhar island (Lat. 16° 51' N., Long. 41° 59' E.), bears about 137° a vessel should alter course south-south-westward, steering for a point close westward of Jabal Mandhar to within about 3 cables of East Mandhar island; 35 a bearing of Duff islet enables a vessel to pass northward of the shoal, with a depth of 3 fathoms (5^m5), close off the northern side of East Mandhar island, whence a south-westerly course leads into the inlet.

Farasān Kabīr.—South-western side.—From Ras Farasān the south-western coast of Farasān Kabīr trends $19\frac{1}{2}$ miles south-eastward 40 to Mary point, where it recedes forming Janāba (Genaba) bay; from Ras Shidda (Skidda), the south-eastern entrance point of Janāba bay, the coast, which is low, trends $7\frac{1}{4}$ miles east-south-eastward to Ras Abara, an indefinite point. The north-western part of Farasān Kabīr is high and rocky.

45 **Anchorage.**—There is anchorage for dhows in El Hamāra, about 4 miles south-south-eastward of Ras Farasān.

Janāba bay, which is entered between Ras Shidda and the eastern side of Kumh island, affords sheltered anchorage in its eastern part; there is also a boat anchorage which is approached with Jabal al Qasr 50 bearing 097°. On the north-eastern side of this bay a road leads to Farasān, a village 6 miles north-north-eastward of Ras Shidda.

North-eastern side.—Dangers.—Khōr al Ma'ādi, between the north-eastern side of Farasān Kabīr and the south-western side of Segīd, is entered between Ras Farasān and the north-western extremity

Chart 15.

of the latter island ; the shores of this inlet are fringed by reefs, which extend to a distance of 2 miles from its head.

A shoal, with a least depth of 2 fathoms (3^m7) over it, lies in the fairway of Khôr al Ma'âdi, about 7½ miles east-south-eastward of Ras Farasân. 5

There are a few villages on the north-eastern side of Farasân Kabîr, amongst which may be mentioned Sair (Seir), 5 miles south-eastward of Ras Farasân, and Héla, 2½ miles farther south-eastward ; these villages are probably uninhabited, except during the date season. 10

Al Qabr is entered eastward of East Mandhar island, and trends southward for about 7 miles and thence about 4 miles east-south-eastward. Coral reefs border both sides of Al Qabr, with some rocky islets lying on the western reef ; Sail Sherra Kabîr and Sail Sherra Saghir (Seil Sherra Saghir) islets lie on the eastern reef, about 1½ miles, 15 respectively, north-westward and west-north-westward of Ras al Jiss, the north-eastern extremity of Farasân Kabîr ; the eastern reef extends about 2 miles north-north-eastward of the latter islet, and a spit, with a least depth of 2 fathoms (3^m7), over it, extends about three-quarters of a mile westward of the north-eastern extremity of this reef. 20

The fairway of Al Qabr, from about one to 1½ miles southward of East Mandhar island, is encumbered with rocks.

There is a narrow tortuous channel through Al Qabr, with a least depth of 3 fathoms (5^m5) in it.

Anchorage.—Directions.—There is anchorage for vessels with 25 local knowledge in depths of from 16 to 20 fathoms (29^m3 to 36^m6), about 1½ miles eastward of Ras Farasân.

Anchorage has been obtained off the village of Héla (*Lat.* 16° 49' N., *Long.* 41° 49' E.) in depths of 7 fathoms (12^m8).

A vessel proceeding into Khôr al Ma'âdi from north-westward (*see* 30 page 360) should pass between Wishka and Safan islets, and then steer south-eastward into the inlet, passing between the dangers outlying the eastern side of Disan island, on the south-western side, and the reef 3 miles west-north-westward of West Mandhar island, on the north-eastern side ; the track, which is indicated by a pecked line on the 35 chart, passes westward of the shoal, with a least depth of 2 fathoms (3^m7) over it, 7½ miles within the entrance to this inlet.

Eastern side.—Off-lying islets and dangers.—The eastern coast of Farasân Kabîr trends 8½ miles south-eastward from Ras al Jiss to Ras Maraba and thence about 9 miles southward to Ras Abara ; 40 Jabal Gutala is situated 1½ miles south-westward of Ras al Jiss. Khella, the port of Farasân Kabîr, about 2 miles northward of the village of Farasân, consists of a small village.

Several rocks and shoals, the positions of which can best be seen on the chart, lie within a distance of 4 miles north-eastward of Ras al Jiss. 45

A bank, on which lie many islets and dangers, extends 6 miles eastward and 8 miles northward of Ras Maraba.

The Abulad islets lie on this bank, within a distance of 6 miles northward of Ras Maraba ; there are many rocky patches northward of them ; there is a conspicuous knob or bluff on the southern end of the 50 central islet of this group.

North Sulain islet lies about 2 miles south-south-eastward of the Abulad islets, and South Sulain islet lies close south-westward of it. South Sulain islet is the highest in this locality, and has a flat summit,

Chart 15.

on which there is a fort ; this islet, from northward, appears to be part of Farasān Kabīr. The Maraba islets lie within about $1\frac{1}{2}$ miles eastward and southward of South Sulain islet.

- 5 Abu Shari'a (Abu Shurri) islets are a small rocky group lying near the eastern extremity of this bank ; a shoal, with a depth of 3 fathoms (5^m5), rock and sand, is reported to lie about 5 cables north-eastward of them.

- Rūk islet lies about $2\frac{1}{2}$ miles west-south-westward of the southern 10 Abu Shari'a islet, and about 2 miles farther west-south-westward, on the edge of the bank fringing the southern part of the eastern side of Farasān Kabīr, lie Hafr (Hafer) islets, which are rocky.

Qamari (Gomari) islet lies on the edge of the bank about 2 miles south-westward of the Hafr islets and about one mile offshore.

- 15 **Anchorage.**—Small vessels with local knowledge can obtain anchorage off Khella ; it is inadvisable to anchor in depths of less than 20 fathoms (36^m6), as the bottom in lesser depths appears to be very uneven. A conspicuous fort, about half a mile north-north-westward of the village of Farasān, is a good landmark for a vessel making this 20 anchorage from northward ; the natives of Farasān village were reported, in 1930, to be unfriendly.

- Dahlia passage.—Islets and dangers.**—Dahlia passage, lying between the bank bordering the eastern side of Farasān Kabīr (*Lat.* $16^{\circ} 39' N.$, *Long.* $42^{\circ} 07' E.$) and the off-lying islets and dangers, has 25 many shoals lying in or near the fairway, the positions of which can best be seen on the chart ; the islets on this bank are described on pages 355-356.

- Hindiya (Hindiyyeh) islet, rocky and with clearly defined edges, lies at the southern entrance to Dahlia passage, about $2\frac{1}{2}$ miles eastward of 30 Ras Abara, and $1\frac{1}{2}$ miles south-south-eastward of this islet a sand cay lies on a bank, which extends to as far as one mile from it ; a shoal, with a depth of $6\frac{1}{2}$ fathoms (11^m9) over it, lies $2\frac{1}{2}$ miles west-south-westward of this cay.

- A bank, with several islets and rocks lying on it, forms the eastern 35 side of the southern part of Dahlia passage ; Mushroom islet, the westernmost of these islets, lies 3 miles northward of Hindiya islet, and eastward and south-eastward of Mushroom islet are the Kulam islets.

- Directions.**—The recommended track through Dahlia passage is indicated by a pecked line on the chart ; this track, leading between 40 the islets and dangers, already described, on either hand, passes southward and eastward of Abu Shugur (Abū Shukar) bank, the southern extremity of which is situated about 2 miles eastward of the Abu Shari'a islets. If bound for Jizān a vessel should approach with the southern fort at that town bearing about 075° ; the islets and 45 dangers in this vicinity are described on pages 362-363.

Dahlia passage is difficult and should only be attempted when the sun is high and astern.

- Strawbridge strait.—Islands and dangers.—Beacon.**—Straw-bridge strait lies between the islets and dangers which form the eastern 50 side of Dahlia passage, on the western side, and the bank on which lie Dhahrat Sumair (Dahret Simer) islet and Masāqif (Mazarkiff) islands, on the eastern side ; it is entered northward of Sumair (Simer) islet.

Sumair islet, lying about $1\frac{1}{2}$ miles southward of the sand cay (*see* above), is low, with a reef extending $2\frac{1}{2}$ miles west-north-westward of it ;

Chart 15.

the northern edge of this reef, about three-quarters of a mile from its north-western extremity, is marked by a beacon, 6 feet (1^m8) in height, consisting of an iron pole surmounted by a diamond; this beacon was reported, in 1934, to have been destroyed. A rock, with a depth of less than 6 feet (1^m8) over it, lies 1½ miles southward of this islet. 5

From a position 9 miles south-eastward of Sumair islet the bank forming the eastern side of Strawbridge strait extends about 18 miles northward; Dhahrat Sumair islet, lying about 3 miles south-eastward of Sumair islet, is low, and is composed of sand and coral, and is fringed by a reef; Masâqif islands, about 6 miles north-north-eastward of Dhahrat Sumair islet, are fringed by a reef. Several rocks and shoals, the positions of which can best be seen on the chart, lie on this bank. 10

Two 4-fathom (7^m3) patches lie 5 and 8½ miles, respectively, north-north-eastward of Sumair islet; a one-fathom (1^m8) patch lies about half a mile north-westward of the northern 4-fathom (7^m3) patch. 15

Directions.—The track recommended is shown by a pecked line on the chart.

From a position about 2 miles north-eastward of Sumair islet (*Lat.* 20° 16' 30" N., *Long.* 42° 13' E.) a north-north-easterly course leads through the fairway of Strawbridge strait, but it should be noted that the pecked line leads over the two 4-fathom (7^m3) patches described above. When a vessel is eastward of the one-fathom (1^m8) patch mentioned above she should bear northward so as to avoid the north-western extremity of the bank which forms the eastern side of the strait; thence an east-north-easterly course with North Kulam islet astern leads south-eastward of South Āmina islet, which lies about 9 miles south-south-westward of Jizân, into the Inner channel (page 366). 25

A vessel making this strait from north-eastward should pass about one mile south-eastward of South Āmina islet, and then steer for a position 2½ miles south-eastward of the Abu Shar'ā islets; thence she should bring the northern islet of this group, astern, bearing 336°, and steer south-south-eastward, passing about three-quarters of a mile north-eastward of the one-fathom (1^m8) patch lying north-eastward of the Kulam islets, whence a south-south-westerly course can be steered, as indicated by a pecked line on the chart, taking care to avoid the two 4-fathom (7^m3) patches mentioned above. 30

Pearly Gates.—Dangers.—Pearly Gates, the channel between the south-eastern edge of Shi'b Farasân and the north-western edge of a bank about 3½ miles south-south-eastward, leads from seaward into the inner channels around and southward of the Farasân group; Duhrâb (Dohrab) island, described on page 358, lies near the north-western edge of this latter bank. 35

Shoals, with depths of 6 and 4½ fathoms (11^m0 and 8^m2) over them, lie on the south-eastern side of this channel, about 2 miles west-north-westward and 3½ miles north-eastward, respectively, of Duhrâb island; a shoal, with a depth of 4 fathoms (7^m3), lies 2½ miles farther east-north-eastward. 40

Shoals, with depths of 3, 4½, and 6 fathoms (5^m5, 8^m2, and 11^m0) over them, lie on the north-western side of the channel, about 4½ miles northward, 6½ miles north-north-eastward, and 6½ miles northward, respectively, of Duhrâb island; a shoal was reported, in 1928, to lie about 5½ miles north-north-eastward of the same island, and there is 50

Chart 15.

a shoal, with a depth of 4 fathoms (7^m3), one mile north-eastward of this latter shoal.

The track through Pearly Gates and thence north-north-westward 5 towards Farasān Kabīr is indicated by a pecked line on the chart.

Islands and dangers on southern part of Farasān bank.—

Duhrāb island, about 6½ miles south-eastward of Marrāq island, is low and sandy, with an islet close off its north-eastern side; it is surrounded, within one mile, by rocks, with depths of less than 6 feet 10 (1^m8) over them, and there is a shoal, with a least depth of 4 fathoms (7^m3), 7 miles south-westward of the island.

Charts 926, plan of Approaches to Loheiya; 15.

Lubwān (Loban) islet, about 30 miles south-eastward of Duhrāb island (*Lat. 16° 17' N., Long. 41° 57' E.*), lies on the north-eastern side 15 of a coral reef which extends 2½ miles south-south-eastward of it; it is composed of coral rock covered with earth and sand, with underhung cliffs, about 10 feet (3^m0) high, and is conspicuous. Landing is only possible in calm weather.

Chart 926, plan of Approaches to Loheiya.

20 Barri (Berri) islands lie on a reef about 9 miles eastward of Lubwān islet; another islet lies 2 miles farther east-north-eastward. A shoal, with a depth of 6 fathoms (11^m0) over it, lies about 6 cables east-north-eastward of the eastern islet.

The passage between Kutāma (Kotama) island, 9½ miles southward 25 of Lubwān islet, and the coral reef extending south-south-eastward of Lubwān islet, is encumbered with dangers and is not recommended.

Kutāma island, lying about 7 miles northward of the southern extremity of Farasān bank, is composed of coral rock and sand, with a ridge of hills in the eastern part of the island; the western side of 30 this island is low and sandy; the eastern side is formed of low cliffs, and is apparently steep-to. A rocky shallow bank extends to as far as 2½ miles from the western side of Kutāma island, one mile north-westward of its northern end, and one mile northward of its north-eastern extremity.

35 An extensive coral reef lies within about 5 miles northward of Kutāma island, and a patch of discoloured water about 2½ miles westward of this reef.

Chart 15.

A bank, the western extremity of which is situated about 10 miles 40 eastward of Duhrāb island, extends about 9 miles east-north-eastward and thence about 6 miles north-westward; on this bank lie Rafa Barri (Rafa Berri) island, Barri (Berri) island, Murain (Maran) islet, and Romain (Remein) island.

Romain island, lying near the north-western end of this bank, is 45 sandy, and is fringed by a reef; the north-western end of this island is its highest part. About 1½ miles eastward of Romain island are some rocks, with depths of less than 6 feet (1^m8) over them; these heads show up well.

Murain islet, about 2 miles south-eastward of Romain island, lies 50 on the northern edge of a reef, which extends about half a mile southward of it; a white cross stands on the eastern extremity of this islet.

Rafa Barri and Barri islands, lying on the western part of this bank, are not so conspicuous as the dark rocky islands in their vicinity; an islet and some rocks lie between their southern ends. A spit, with

Charts 15, 8d, 2523.

Chart 15.

a least depth of one fathom (1^m8) over it, extends about $1\frac{1}{2}$ miles west-north-westward of the north-western end of Rafa Barri island, and a spit, with a least depth of 2 fathoms (3^m7), about half a mile eastward of its eastern side; a spit, with a depth of 2 fathoms (3^m7), extends to 5 as far as half a mile from the western side of Barri island.

Sail Ruba (Seil Ruba) islet, 3 miles eastward of Murain islet, is composed of coral; Nakal island lies about half a mile south-south-westward of Sail Ruba islet.

Sumair (Simer) island, about $1\frac{1}{2}$ miles southward of Nakal island 10 (*Lat. $16^\circ 20' N.$, Long. $42^\circ 19' E.$*), has a small village on its western side; 'Irdhain (Erdhein) island, about one mile east-south-eastward of Sumair island, with an islet lying between them, is rather high. A 2-fathom (3^m7) patch lies about $1\frac{1}{2}$ miles east-north-eastward of Sumair island, and a 3-fathom (5^m5) patch about $1\frac{1}{2}$ miles north-east- 15 ward of 'Irdhain island.

A sand and coral bank, the south-western end of which is situated about $1\frac{1}{2}$ miles north-north-eastward of Sail Ruba islet, extends about 10 miles north-north-eastward; Zurt (Zuhrat) islet lies on this bank about 2 miles from its south-western end; a detached rock, with a 20 depth of less than 6 feet (1^m8) over it, lies about half a mile south-westward of the south-western end of this bank, and a shoal, the position of which is approximate, about half a mile west-north-westward of this detached rock. The Boduffer islets, also lying on this bank, consist of two islets, about one mile apart, the southern of 25 which is $1\frac{1}{2}$ miles eastward of Zurt islet; a shoal lies about three-quarters of a mile northward of the northern islet. Three detached rocks, each with a depth of less than 6 feet (1^m8), lie within a distance of three-quarters of a mile from the eastern side of the northern part of this bank. 30

Hashish reef, about 2 miles southward of Zurt islet, is generally submerged in winter; Al 'Unsurāt ('Onsurat) island lies about $1\frac{1}{2}$ miles south-eastward of Hashish reef.

Rukada (Rokada) islet lies $2\frac{1}{2}$ miles eastward of Al 'Unsurāt island, and three other islets lie within 2 miles southward and south-westward 35 of the former islet.

A shallow bank, the southern extremity of which is situated about $2\frac{1}{2}$ miles northward of Rukada islet, extends $5\frac{1}{2}$ miles in a northerly direction; two small reefs, with depths of less than 6 feet (1^m8) over them, lie about three-quarters of a mile northward of the southern 40 end of this bank, and Sail Siya (Seil Siya) islet, which is low and sandy, about $4\frac{1}{2}$ miles northward of Rukada islet; Keevil islet, a sand cay one mile northward of Sail Siya islet, was reported, in 1931, to be non-existent. A detached rock, the existence of which is doubtful, is charted about $1\frac{1}{2}$ miles west-north-westward of Keevil islet. 45

A bank, the southern extremity of which is situated about $5\frac{1}{2}$ miles northward of Keevil islet, extends $4\frac{1}{2}$ miles northward, and has a least depth of one fathom (1^m8) over it.

Dugaila (Dokeila) islands, about 4 miles southward of Al 'Unsurāt island, are rocky and lie at the south-western end of a shallow bank; 50 Buklan island, the north-western and larger of the two islands, is about 30 feet (9^m1) high, and on it stand a village and a mosque.

Al Baidhā (Bodhi) islet, $1\frac{1}{2}$ miles east-south-eastward of the Dugaila islands, is high and conspicuous; some above-water rocks lie within

Chart 15.

about one mile westward and northward of it. A reef, almost awash, with two sand cays on it, extends $1\frac{1}{2}$ miles northward from a position about half a mile south-eastward of the southern extremity of this islet, and a detached rock, with a depth of less than 6 feet (1^m8) over it, lies about $2\frac{1}{2}$ miles southward of Al Baidhā islet.

Jabal Jink and Maflaqain (Maflakein) islets, both of which are high and rocky, lie on a reef, which is situated about 2 miles south-westward of the southern extremity of Buklan island (*Lat.* $16^{\circ} 15' N.$, *Long.* $42^{\circ} 27' E.$); a 3-fathom (5^m5) patch lies about three-quarters of a mile east-south-eastward of Jabal Jink islet. Several shoals, with a least depth of 3 fathoms (5^m5), lie between these islets and 'Irdhain island.

Fasht island, $2\frac{1}{2}$ miles west-south-westward of Maflaqain islet, is high; a small village and a mosque are situated in the centre of this island. From the south-western side of the island a reef, over which the sea breaks, extends about $4\frac{1}{2}$ miles southward, terminating in a 2-fathom (3^m7) patch; two islets lie on this reef. A shoal, with a depth of 2 fathoms (3^m7) over it, lies about half a mile east-north-eastward of the northern extremity of Fasht island.

Sana islet, lying 5 miles west-south-westward of Fasht island, is low, white, and sandy; a bank, with a least depth of 3 fathoms (5^m5) over it, extends about half a mile north-eastward and $1\frac{1}{2}$ miles south-eastward of it; a detached 3-fathom (5^m5) patch lies three-quarters of a mile farther south-eastward.

Majur island lies $8\frac{1}{2}$ miles east-south-eastward of Sana islet; a 3-fathom (5^m5) patch lies close north-eastward of its north-eastern side.

A shoal, with a least depth of 2 fathoms (3^m7) over it, trends $3\frac{1}{2}$ miles southward from a position one mile south-westward of Majur island, and thence about 3 miles westward; two 3-fathom (5^m5) patches lie $1\frac{1}{2}$ miles north-westward and one mile south-westward, respectively, from the western extremity of this shoal.

The islands and dangers described above lie on extensive banks, on which are many other shoals and rocky patches.

Anchorage.—Vessels with local knowledge can obtain anchorage, sheltered from southerly winds, off the north-eastern side of Romain island.

Anchorage was obtained by H.M.S. *Weston*, in 1937, in a depth of $2\frac{1}{2}$ fathoms (5^m0), off the north-western side of Buklan island.

Directions.—The recommended tracks over Farasān bank are indicated by pecked lines on the chart, but the chart should be used with the utmost caution as the areas inside the danger lines are practically unexamined; vessels should keep as far as possible to the tracks shown.

Charts 15, 8d.

North-western approach.—A vessel approaching the Farasān islands from north-westward should make a position about 30 miles west-north-westward of Mudhan islet at a time suitable for early morning stellar observations. Mudhan islet should be approached on an easterly bearing, passing close northward of the north-western extremity of Shi'b Farasān; this islet is usually sighted from a distance of about 15 miles, and is generally seen before the beacon on it. When Jabal Disan bears 128° a vessel should steer for it on that bearing, which leads between Wishka islet and the shoal, with a least depth of 3 fathoms (5^m5) over it, $4\frac{1}{2}$ miles west-south-westward of it, to within

Charts 8d, 2523.

Charts 15, 8d.

about $2\frac{1}{2}$ miles of Disan island, when course should be altered southward, passing between Disan and Sarso islands, whence she should steer for Jabal Hegena, $3\frac{1}{2}$ miles south-eastward of Ras Farasān, on an easterly bearing, and thence pass eastward of Kaira island and north-eastward of Dhā al Faif island (*Lat. 16° 42' N., Long. 41° 45' E.*). 5

Chart 15.

If bound for Jizān a vessel, from a position north-eastward of the south-eastern extremity of Dhā al Faif island, should steer east-south-eastward towards the southern extremity of Kumh island to within about half a mile of its south-western coast, when she should alter course south-eastward keeping this coast, which is steep-to, aboard; a strong current is, at times, experienced here, and tide rips, caused by the uneven bottom, should not be mistaken for reefs. When about one mile southward of Kumh island a vessel should alter course east-south-eastward and steer to pass about $1\frac{1}{2}$ miles northward of Sumair islet, and thence the recommended route is through Strawbridge strait; as already stated, Dahlia passage is difficult and should only be attempted when the sun is high and astern. The directions for proceeding through Strawbridge strait are given on page 357, and those for a vessel using Dahlia passage on page 356. 10
15
20

If bound for the Inner channel in the vicinity of Atwāq (Towak) islet, 42 miles east-south-eastward of Kumh island, a vessel, from a position about one mile north-eastward of Dumsuq island, should steer south-eastward, passing close north-eastward of Romain island, and south-westward of the rocky heads lying about $1\frac{1}{2}$ miles eastward of the latter island. The bank extending about three-quarters of a mile northward of Sail Ruba islet shows up well and should be passed fairly close to on an easterly course, taking care to avoid the detached rock and shoal on the northern side of the fairway. When northward of the eastern extremity of Al 'Unsurāt island a vessel should alter course east-south-eastward to pass southward of the bank extending southward of Sail Siya islet; after passing southward of this bank a north-north-easterly course should be steered for about 4 miles, and thence an east-south-easterly course, passing about half a mile north-eastward of Atwāq islet, into the Inner channel. 25
30
35

Chart 8d.

An alternative route to the one described above is taken from a survey made, in 1940, by H.M. Ships.

A vessel should steer 065° or 105° for a position $4\frac{1}{2}$ miles 350° from the centre of Sail Makawa island; these courses lead south-eastward and north-eastward, respectively, of a shoal, with a depth of 6 fathoms (11^m0) over it, lying about 6 miles north-westward of this island. 40

Then an 085° course should be steered for $10\frac{1}{2}$ miles until Mudhan islet bears 310° , distant one mile. Thence a vessel should steer 060° for 10 miles, whence the summit of Jabal Muhammad island bears 150° , distant 5 miles; the vessel will then be in depths of 5 fathoms (9^m1), with shoal water one mile south-eastward and $1\frac{1}{2}$ miles north-westward of her track. 45

After running a further 10 miles on this course in greater depths, a vessel should steer 130° for $12\frac{1}{2}$ miles, until North Ghūrab islet is abeam, bearing 040° , distant 2 miles.

No further detailed directions are given, but a track leads into the Inner channel westward of Ras Turfa (*Lat. 17° 00' N., Long. 42° 19' E.*).

Charts 8d, 2523.

Charts 15, 8d.

South-western approach.—A vessel approaching from south-westward and intending to pass through Pearly Gates should make Jabal at Tāir and shape course for a position about 15 miles south-westward of Duhrāb island; Duhrāb island, which will not usually be sighted until a vessel is in depths of less than 100 fathoms (182^m9), should be steered towards on a north-easterly bearing. An east-north-easterly course leads through Pearly Gates; the track passes north-westward of the shoals, with depths of 6 and 4½ fathoms (11^m0 and 8^m2), lying 2 miles west-north-westward and 3½ miles north-eastward, respectively, of Duhrāb island, and south-eastward of the shoal, with a depth of 3 fathoms (5^m5), lying 4½ miles northward of the same island. After passing north-westward of the shoal, with a depth of 4½ fathoms (8^m2), mentioned above, a vessel should alter course north-north-westward, so as to pass between the shoal, with a depth of 4½ fathoms (8^m2), lying 6½ miles north-north-eastward of Duhrāb island, and the shoal, with a depth of 4 fathoms (7^m3), about one mile east-south-eastward of the shoal, with a depth of 4½ fathoms (8^m2); thence the recommended track leads towards Farasān Kabir, passing between Akbar 'Uqa and Salūba islands.

Chart 15.

A track is shown on the chart, leading south-eastward from the north-eastern end of Pearly Gates, passing south-westward of Rafa Barri island and Sana islet and north-eastward and eastward of the bank on which lie Duhrāb island and Lubwān islet.

INNER CHANNEL (continued from page 349).—**Ras Turfa to Ras Musāghib.**—The Inner channel lies between the coast and the eastern side of Farasān bank. It passes north-eastward of Hibār island, Umm al Qarīb (Umm al Karib), and Kathriya (Kadheiya) islet, and eastward of 'Ashiq (Ashik) and Atwāq islets.

Caution.—Chart No. 15 should be used with the utmost caution. The areas inside the danger lines are practically unexamined and it is advisable to keep as far as possible to the tracks shown in pecked lines.

Aspect.—From the eastern entrance point of Khōr Abu as Sab'a, about 8 miles eastward of Ras Turfa, the coast, which is fringed by a reef, trends about 51 miles south-south-eastward to Ras Musāghib; northward of Jizān it is flat and sandy, while southward there are rocky cliffs backed by jungle.

The hills, about 200 feet (61^m0) high, close behind the town of Jizān, are conspicuous, being the only high land in the neighbourhood.

Qarn ash Shūra (Karn ash Shurra), about 4 miles south-south-eastward of Jizān, is a small bushy point.

Oreste point is situated about 31 miles south-south-eastward of Qarn ash Shūra.

Chart 212, plan of Approaches to Medi.

Maidi (Medi), a conspicuous village situated on the top of a hill about 4½ miles south-eastward of Oreste point (*Lat.* 16° 22' N., *Long.* 42° 45' E.), consists chiefly of huts, but a square tower, surrounded by a few stone buildings, stands in the middle; about 7 cables northward of this village, on another hill, is a conspicuous round white fort.

Chart 15.

Islands and dangers.—Farāfir island, 1½ miles east-south-eastward

Charts 15, 8d, 2523.

Chart 15.

of Ras Turfa, is bordered by a reef ; a rock, with a depth of less than 6 feet (1^m8) over it, lies on this reef, close westward of the north-western end of the island, and two islets lie on the reef, close westward of its south-eastern end. From a distance the island and islets appear to form one island. 5

A patch of discoloured water, over which there is a depth of 15 fathoms (27^m4), lies about 4 miles south-westward of Farāfir island, and a 13-fathom (23^m8) patch about 1½ miles farther south-westward.

Between the eastern entrance point of Khōr Abu as Sab'a and Jizān 10 the coastal reef extends to as much as 2 miles offshore.

Abu Shugur bank, the northern extremity of which is situated about 6½ miles south-westward of Ras Turfa, extends 14½ miles southward ; the depths over this bank are very irregular, and there are probably shoal heads on it. 15

Abu Shugur islet, lying on the north-eastern part of this bank, is covered with trees, is conspicuous and, when seen from a distance, has the appearance of being two islets, especially on north-westerly bearings ; Dhahrat Durāka (Abū Raji) islet, 4½ miles southward of Abu Shugur islet, shows as a sand cay during the summer, but at other times the sea breaks over it ; between Abu Shugur and Dhahrat Durāka islets are four other islets, viz., Two Sisters, Flop and Durāka (Dhu Raji). 20

Hibār island, 4½ miles eastward of Durāka islet, is fringed by a reef which extends about half a mile southward and south-south-westward of it. 25

A bank, composed of sand and coral, the north-western end of which is situated about 3½ miles south-south-eastward of Hibār island, extends about 3½ miles south-eastward ; on this bank lie five islets, the north-western of which is called Umm al 'Asal (Umm al Kum), 30 with Umm al Qarīb close eastward of it ; the south-eastern islet is known as Umm al Kathīb (Umm al Kuthib).

A shoal, with a depth of one fathom (1^m8) over it, lies about 1½ miles north-north-westward of Umm al 'Asal, and another shoal about one mile farther northward ; a rock, with a depth of less than 6 feet 35 (1^m8) over it, lies about half a mile south-westward of the same islet.

A reef, which partly dries, lies with its north-western extremity one mile south-south-eastward of Umm al 'Asal, and extends 2½ miles south-eastward ; Āmina island and South Āmina islet lie on this reef, and a rock, with a depth of less than 6 feet (1^m8) over it, about a 40 quarter of a mile from the north-eastern coast of Āmina island. A shoal, with a depth of 5 fathoms (9^m1), lies about 1½ miles eastward of South Āmina islet.

A shoal, with a least depth of 3 fathoms (5^m5) over it, lies 4 miles west-north-westward of Jizān (Lat. 16° 54' N., Long. 42° 30' E.) ; it 45 is not easily discernible.

Chart 8d, plan of Gizan.

A shoal, with a depth of 1½ fathoms (2^m7) over it, was reported, in 1932, to lie 7 cables west-south-westward of Fish point, a projection 7 cables southward of Jizān ; a shoal, with a least depth of 2 fathoms 50 (3^m7), lies 4 cables farther southward.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies 2½ miles southward of Fish point and about 1½ miles offshore ; the coastal reef in this vicinity extends to a distance of about half a mile offshore.

Charts 15, 8d, 2523.

Chart 15.

A shallow bank, the northern extremity of which is situated about $6\frac{1}{2}$ miles east-south-eastward of South Āmina islet, extends about $4\frac{1}{2}$ miles southward; Kathriya islet, lying near the northern end of this bank, and Ja'fari island, 2 miles south-south-westward, are covered with bushes and are conspicuous; Dhahrat Ja'fari (Dahret Jáferi), a small sand cay, fringed by a reef, $1\frac{1}{2}$ miles east-south-eastward of Ja'fari island, is only visible at low water. From southward Kathriya islet is the first of this group to be seen.

- 10 A shoal, with a depth of 17 feet (5^m2) over it, was reported, in 1932, to lie 2 miles north-north-eastward of Kathriya islet; shoal water is reported to extend from this shoal to Kathriya islet.

Charts 3047, plan of Khor el Wahla; 15.

- Harrier reef, composed of coral, lies $1\frac{1}{2}$ miles south-south-westward of Tower point, the northern entrance point of Khör Wahlān (Khor el Wahla), which is situated about $9\frac{1}{2}$ miles south-eastward of Qarn ash Shūra; Sandy islet lies on its eastern edge. The coastal reef, eastward of the south-eastern side of Harrier reef, extends to a distance of about $1\frac{1}{2}$ miles offshore and to within about 3 cables of Harrier reef.

20 Chart 15.

- 'Ashiq (Ashik) bank, the northern extremity of which is situated about 11 miles south-south-eastward of Dhahrat Ja'fari, is a shallow bank extending $7\frac{1}{2}$ miles south-south-eastward; 'Ashiq islets lie on the southern part of this bank, and a rock, with a depth of less than 6 feet (1^m8) over it, lies about three-quarters of a mile south-south-eastward of the southern islet, which is only a sand cay.

Charts 212, plan of Approaches to Medi; 15.

- Atwāq islet, $4\frac{1}{2}$ miles south-south-eastward of the southern 'Ashiq islet, is composed of coral, its coasts consisting of overhanging cliffs about 10 feet (3^m0) high. It is fringed by a reef which extends about a quarter of a mile northward and eastward of it; a sandspit, which covers only at high water in winter, extends about 2 cables eastward of the eastern extremity of this islet.

- 'Ashiq bank and Atwāq islet may be passed on either side, but the recommended track is eastward of them.

Chart 212, plan of Approaches to Medi.

Oreste shoal, awash in places, extends about $2\frac{1}{2}$ miles westward of Oreste point, and dries to a distance of about $1\frac{1}{2}$ miles offshore; this shoal does not show up well.

- 40 A mudbank, which dries, extends 5 cables southward of Bushy point, the north-western entrance point of Mersa Baqila (Bagla), which is situated $1\frac{1}{2}$ miles south-eastward of Oreste point (*Lat.* $16^\circ 22' N.$, *Long.* $42^\circ 45' E.$); it was reported, in 1934, that westward of this mudbank were several shallow rocky patches.

- 45 A rock, with a depth of less than 6 feet (1^m8) over it, lies $1\frac{1}{2}$ cables offshore, about $1\frac{1}{2}$ miles south-south-eastward of Bushy point.

The coastal reef extends to as far as $1\frac{1}{2}$ miles offshore in the vicinity of Maidi.

Chart 15.

- 50 Umm al Hummādh (Hommadh islet), 6 miles west-south-westward of Atwāq islet, is a coral islet lying near the eastern edge of Farasān bank; a shoal, with a least depth of 2 fathoms (3^m7) over it, lies 4 miles north-north-westward, and two rocks, each with a depth of less than 6 feet (1^m8), about three-quarters of a mile north-eastward and

Charts 15, 8d, 2523.

Chart 15.

1½ miles eastward, respectively, of the northern extremity of this islet. Two other islets, each fringed by a reef, lie one mile westward and 2 miles south-westward, respectively, of Umm al Hummādh.

Anchorage and inlets.—Qarnal Wadā' (Karn al Wada) is a shallow bight on the south-eastern side of the eastern entrance point of Khōr Abu as Sab'a. 5

Chart 8d, plan of Gizan.

The town of Jizān, situated at the north-western end of a small promontory, consists principally of huts, with a few stone buildings. 10 A conspicuous fort, 150 feet (45^m7) high, stands near the coast, about one cable south-eastward of the town, and there is another fort, which is also conspicuous, consisting of a circular tower surmounted by a flagstaff, situated about one cable farther southward, on the hills southward of the town; the latter fort is visible from a distance of at 15 least 5 miles.

Small quantities of fresh provisions may be obtained at Jizān.

There is anchorage in depths of from 6 to 7 fathoms (11^m0 to 12^m8) about 2½ miles offshore, westward of the northern fort, and in depths of from 3½ to 4 fathoms (6^m4 to 7^m3), about one mile west-south-west- 20 ward of the same fort. A good berth for a small vessel can be found by steering for the southern fort, bearing 070°, and anchoring when Fish point is in line with Rushdi point, 7½ cables south-eastward, bearing 129°.

A break in the coastal reef fronting the fort affords sheltered anchor- 25 age for small craft with local knowledge.

A vessel approaching Jizān from southward must be careful to be well westward of the dangers fronting the town before altering course for the anchorage.

A boat channel between the reefs is found from the anchorage by 30 steering for the conspicuous crag on Fish point, and altering course northward when the rows of dhows in the small inlet in the coastal reef are in line with each other. A small pulling boat is necessary for landing.

Chart 3047, plan of Khor el Wahla.

35

Khōr Wahlān is a narrow shallow inlet, both shores of which are fringed by banks, which dry. Small vessels can anchor westward of the entrance, from 5 to 6 cables offshore, in depths of about 2½ fathoms (4^m6), or farther southward in about the same depths, 7 cables north-north-eastward of Harrier reef (*Lat.* 16° 43' N., *Long.* 42° 37' E.); 40 the latter appears to be the better berth.

The southern extremity of the belt of mangroves at the entrance to this inlet is distinct, and is a good mark.

Chart 15.

Anchorage may be obtained in depths of 10 fathoms (18^m3), sand, 45 with the north-eastern extremity of the northern 'Ashiq islet, bearing 300°, distant 4 cables.

Chart 212, plan of Approaches to Medi.

Small vessels with local knowledge can obtain sheltered anchorage northward of the sandspit extending eastward of Atwāq islet. 50

Mersa Baqila, the port of Maidi, has a conspicuous tower on the northern side of its entrance, and there are a few huts on the southern entrance point; a ridge of white sandhills extends from Bushy point to Oreste point. There is a small harbour here used by dhows, the

Charts 15, 8d, 2523.

Chart 212, plan of Approaches to Medi.

entrance to which is through a narrow channel, with a least depth of 2 feet (0^m6) in it, leading between the mudbanks extending from the entrance points.

- 5 Good anchorage can be obtained in a depth of 4 fathoms (7^m3) with the tower on the north-western side of the entrance, bearing 050°, distant one mile.

Chart 15.

The Inner channel, southward of Ras Musāghib, is continued below.

- 10 **Directions** (continued from page 349).—From a position about 1½ miles south-westward of Ras Turfa a south-easterly course should be steered, passing about 1½ miles north-eastward and eastward of Kathriya islet; it should be noted that this track passes about 4 cables south-westward of the shoal, with a depth of 17 feet (5^m2), 2 miles

- 15 north-eastward of Kathriya islet.

After passing eastward of this islet a vessel should alter course south-south-eastward, so as to pass about one mile eastward of 'Ashiq bank and islands, and about the same distance eastward of Atwāq islet; when Maidi village is on an east-north-easterly bearing course

- 20 should be altered southward, passing about 4½ miles westward of Ras Musāghib.

The directions for the Inner channel, southward of Ras Musāghib, are continued on page 369.

Charts 926, plan of approaches to Loheiya; 15.

- 25 **INNER CHANNEL** (continued from above).—**Ras Musāghib to Luhaiya.**—The Inner channel lies between the coast and the off-lying islets and dangers, on the eastern side, and the eastern edge of Farasān bank, on the western side. It passes eastward of Ghurāb (Ghorab), Hoot, and Uwaf islets, and eastward and southward of Buhais
- 30 (Baās) islet; a pecked line on chart 15 shows a track passing between Buhais and Rakl islets, on the northern side, and Nasīb shoal and Juraib (Jurab) islet, on the southern side, but it was reported, in 1934, that this route was impassable. From westward of Juraib islet a track is shown trending southward and passing between Zurbāt island and
- 35 the Dhahāyir (Dahayir) islets, and thence between Hamar island (*Lat.* 15° 45' N., *Long.* 42° 37' E.) and Bryony shoal.

An alternative route from eastward of Buhais islet leads between the coastal reef, on the eastern side, and Nasīb shoal, Dhahāyir islets, and Bryony shoal, on the western side.

- 40 **Aspect.**—From Ras Musāghib the coast trends about 27 miles southward to Ras al Khatit and thence about 8 miles south-south-westward to Luhaiya (Loheiya); it is fringed by a reef extending to as far as 3½ miles offshore. From about 4 miles northward of Buhais, a coastal village 16 miles southward of Ras Musāghib, the coast is
- 45 bordered by mangroves and backed by sandy slopes covered with scrub.

Chart 15.

- Habl, a small town, 6 miles southward of Ras Musāghib, stands on a slight elevation; a house, painted white, in this town, is con-
- 50 spicuous.

Islands and dangers.—A reef, with depths of less than 6 feet (1^m8) over it, lies at the edge of the coastal reef about 1½ miles south-westward of Ras Musāghib.

Charts 15, 8d, 2523.

Chart 15.

Ghurāb islet, $9\frac{1}{4}$ miles south-westward of Ras Musāghib, lying on the western side of the fairway, is uninhabited; Abu Shadd islet, fringed by a reef, about $3\frac{1}{4}$ miles south-westward of Ghurāb islet, is covered with bushes, and another islet, also fringed by a reef, lies three-quarters of a mile north-north-westward of Abu Shadd islet; Abu Shajar (Abū Shejer) islet, 2 miles southward of Ghurāb islet, is sandy and awash; Hoot islet, $1\frac{1}{4}$ miles eastward of Abu Shajar islet, is a small sand cay, and between these two islets is a reef with depths of less than 6 feet (1^m8) over it; Uwaf islet, 3 miles south-south-eastward of Hoot islet, is a sand cay, fringed by a reef; Ash Shi'bān (Esh Shaban), one mile west-south-westward of Uwaf islet, is a sandbank, which dries; Buhais islet, 3 miles south-south-eastward of Ash Shi'bān, is low and sandy. All these islets lie near the eastern edge of Farasān bank, and in their vicinity are numerous rocky heads and shoals, the positions of which can best be seen on the chart; Farasān bank extends $4\frac{1}{4}$ miles northward of Ghurāb islet and about $1\frac{3}{4}$ miles southward of Buhais islet. A detached rock, with a depth of less than 6 feet (1^m8), lies just outside the edge of the bank, one mile south-south-eastward of Buhais islet.

A shoal, the position of which is approximate, lies at the edge of the coastal reef, about $1\frac{1}{4}$ miles southward of Habi; another shoal, the position of which is approximate, was reported, in 1917, to lie on the eastern side of the fairway, about $3\frac{1}{2}$ miles south-south-westward of Habi and 2 miles offshore.

The coastal reef extends $2\frac{1}{2}$ miles offshore westward of Buhais.

A shoal, with a least depth of 2 fathoms (3^m7) over it, the position of which is approximate, lies about $4\frac{1}{2}$ miles south-south-westward of Buhais and $2\frac{1}{2}$ miles offshore.

Nasīb shoal, the eastern extremity of which is situated $3\frac{3}{4}$ miles south-south-westward of Buhais islet, extends 2 miles west-south-westward, on the southern side of the principal track through the Inner channel; on the eastern end of this shoal is a cay.

Juraib islet (*Lat. $15^{\circ} 57' N.$, Long. $42^{\circ} 38' E.$*), about 2 miles westward of the cay on Nasīb shoal, is a small sandy cay surmounted by reefs, and lies at the north-eastern end of a small bank; at the southern extremity of this bank, about three-quarters of a mile south-westward of Juraib islet, is a rock, with a depth of less than 6 feet (1^m8) over it.

Rakl islet, one mile northward of Juraib islet, on the northern side of the principal track through the Inner channel, is a low sand cay lying at the south-eastern end of a bank, which extends three-quarters of a mile north-westward of the former islet; a tomb stands on the north-eastern end of this islet.

Zajj islet and Zaha (Zoha) island, $2\frac{1}{2}$ miles, respectively, north-westward and west-north-westward of Rakl islet, are low and sandy, and the depths in their vicinity are irregular; a rock, with a depth of less than 6 feet (1^m8) over it, lies $1\frac{1}{4}$ miles eastward of Zajj islet, and shoals, with least depths of one and 2 fathoms (1^m8 and 3^m7), lie $3\frac{1}{2}$ miles and one mile, respectively, northward of Zaha island. A shallow bank extends about $1\frac{1}{4}$ miles westward of Zaha island, and shoals, with a least depth of $2\frac{1}{2}$ fathoms (4^m6), lie within $3\frac{1}{2}$ miles south-westward and west-south-westward of this island.

Zurbat island, $3\frac{1}{2}$ miles south-westward of Juraib islet, lies on the western side of the principal track through the Inner channel; a reef,

Chart 15.

with a depth of one fathom (1^m8) at its southern end, extends about three-quarters of a mile south-south-westward of this island, and a 3-fathom (5^m5) patch lies about half a mile from its north-western side.

- 5 A shallow bank connects Zurbat and Zaha islands, and it is not considered advisable to pass northward and westward of the former island.

Between Nasīb shoal and the Dhahāyir islets, 4 miles southward, are some shoals, with a least depth of 6 feet (1^m8); this passage is not recommended.

- 10 *Chart 926, plan of Approaches to Loheiya.*

Dhahāyir islets are four small indefinite sand cays, which are sometimes submerged, each fringed by a reef; Funnel islet, the eastern cay, is the largest and highest, and lies about 1½ miles south-south-eastward of the northern cay. Foul ground extends about 2½ miles westward

- 15 and 2 miles south-westward of Funnel islet.

The coastal reef, on which lie some patches which dry, extends about 3½ miles westward of Ras al Khatit and to within about three-quarters of a mile of the area of foul ground embracing the Dhahāyir islets.

- 20 Shoals and foul ground lie between Bryony shoal, 5½ miles south-south-westward of Funnel islet, and the southern extremity of the foul ground embracing the Dhahāyir islets; Bryony shoal, which is usually difficult to distinguish, has a least depth of 3½ fathoms (6^m4) over it.

- Ajusak islet, about 3 miles south-south-westward of Zurbāt island, and Dhuraima (Dorama) islet, about 2½ miles farther south-westward, 25 lie on the same bank as Zurbāt island.

- Hamar island, lying 7½ miles south-south-westward of Funnel islet, is sandy, with bushes near its centre, and is fringed by a reef, which extends 4 cables south-westward of it; a shallow bank extends about 7 cables farther south-westward, the extremity of which is often 30 difficult to distinguish; an above-water rock lies about one cable off the cliffy south-western extremity of this island (*Lat. 15° 45' N., Long. 42° 37' E.*). There is a low shifting sandspit at the north-eastern end of the island, and a shallow bank extends about 4½ cables north-eastward of it.

- 35 *Chart 15.*

- Anchorage.**—Vessels with local knowledge can obtain anchorage off Hahl; a vessel has obtained anchorage in depths of 4½ fathoms (8^m2) mud, 1½ miles from the coastal reef, with this village bearing 097°. This anchorage should be approached with the village bearing 40 100°, which leads southward of a reef off Hahl and northward of a shoal lying a mile from the coastal reef; on this bearing the depths decrease gradually.

- There is reported to be good anchorage in depths of 5 fathoms (9^m1) with the north-eastern extremity of Ghurāb islet, bearing 240°, 45 distant about one mile; the approach to this anchorage requires caution.

Small vessels with local knowledge can obtain anchorage northward of Hoot islet.

- Good anchorage may be obtained by small vessels with local knowledge in depths of 17 fathoms (31^m1), 3 cables south-eastward of Raki 50 islet.

Chart 926, plan of Approaches to Loheiya.

There is good anchorage for moderate-sized vessels off the south-eastern side of the sandspit at the north-eastern end of Hamar island

Charts 8d, 2523.

Chart 926, plan of Approaches to Loheiya.

or, during strong southerly winds, off the reef fringing the north-western side of this island, about 4 cables from the island.

Anchorage has been obtained in depths of $4\frac{1}{2}$ fathoms (8^m2), about 4 miles northward of Luhaiya; eastward of this position there is good anchorage for small vessels with local knowledge in a bight off the coast, but this bight is encumbered with rocks and foul ground.

Charts 926, plan of Approaches to Loheiya; 15.

Directions (continued from page 366).—From a position about $4\frac{1}{2}$ miles westward of Ras Musāghib a vessel should steer southward, 10 as indicated by a pecked line on the chart, passing about $1\frac{1}{2}$ miles eastward of Buhais islet and, continuing this course for about $1\frac{1}{2}$ miles, alter course westward to pass between Rakl and Juraib islets, taking care to avoid the bank extending $1\frac{1}{2}$ miles southward of Buhais islet but, as already stated, this latter passage was reported, in 1934, to be impassable. After passing between Rakl and Juraib islets a vessel should alter course gradually southward, so as to pass eastward of Zurbāt island, and thence between Hamar island and Bryony shoal, whence a south-westerly course leads through the fairway to a position about 7 miles west-south-westward of Luhaiya. 20

The alternative route passing eastward of the Dhahāyir islets is not so well known, and the extent of the reef extending westward of Ras al Khatit has not been determined.

The directions for a vessel proceeding southward to Kamarān bay are given on page 379. 25

Chart 926, plan of Approaches to Loheiya.

LUHAIYA AND WESTERN APPROACH.—The bay southward of Luhaiya (*Lat. $15^{\circ} 42' N.$, Long. $42^{\circ} 42' E.$*), the northern approach to which is described on pages 366-369, is shallow and mostly bordered by mangroves; the town stands on its northern side. 30

A narrow mangrove swamp, on the southern end of which, 8 cables south-westward of the southern extremity of the town, is a sandy islet, 25 feet (7^m6) high, forms the north-western side of this bay; the coastal reef extends about 6 cables westward of this swamp, and a detached coral reef lies about 3 cables farther westward; several detached patches, with a least depth of one fathom (1^m8), lie within one mile westward of this latter reef. A coral reef extends about $2\frac{1}{2}$ miles south-westward of the 25-foot (7^m6) high islet and on this reef, 7 cables south-westward of the islet, is a black rock which was reported by H.M.S. *Weston*, in 1938, not to be visible; there is a boat passage, at high water, between this rock and the islet. 40

The eastern side of this bay is formed of low mangrove swamps, fringed by a coral reef, which extends to as far as one mile offshore in its northern part, and backed by a barren desert; the coastal reef extends to as far as $2\frac{1}{2}$ miles offshore at the southern end of the bay. 45

This bay is entered between the southern extremity of the reef forming its north-western side and a detached reef, 6 cables south-eastward; between the coastal reef and the mangrove swamp on which stands the sandy islet is a narrow winding channel leading to the town. 50

Aspect.—Luhaiya Hill fort, a mass of ruins but conspicuous from seaward, stands on the summit of a ridge of hills behind the town.

Jabal Qudmiya (Jebel Kudmia), about $7\frac{1}{2}$ miles east-south-eastward,

Charts 143, 8d, 2523.

Chart 926, plan of Approaches to Loheiya.

and Jabal Kūsha, about $8\frac{1}{2}$ miles south-eastward of Luhaiya Hill fort, are small peaks. These, being the only hills near the coast in this locality, are conspicuous; farther inland are some high mountains, but they are seldom visible from seaward.

See view on plan.

Islands and dangers.—Kutāma island, on the northern side of the western approach to Luhaiya, is described on page 358.

Charts 548; 926, plan of Approaches to Loheiya.

- 10 'Uqbān (Okban) island, lying on the southern side of the western approach to Luhaiya, about 8 miles south-south-eastward of Kutāma island, is nearly divided into two parts about the middle of the island where it is low and sandy. The northern part of the island is flat, with a conspicuous summit, 60 feet (18^m3) high, at its northern end; 15 the southern part forms a flat tableland, 18 feet (5^m5) high at its northern end, rising to an elevation of 66 feet (20^m1) near its southern extremity, with steep cliffs on its north-eastern side.

Chart 548.

- A coral reef, extending to as much as $6\frac{1}{2}$ cables offshore, fringes 20 the northern and western sides of 'Uqbān island and part of its eastern side; two rocky islets lie off the eastern side of the northern part of the island, the north-eastern of which is connected by a reef with its north-eastern point. A shallow bank extends 8 cables northward of the north-western extremity of the island, and a bank, with a least 25 depth of 44 feet (13^m4) over it, lies one mile farther northward.

Chart 926, plan of Approaches to Loheiya.

- Antufash (Entufash) island, lying 5 miles eastward of Kutāma island (*Lat. $15^\circ 42'$ N., Long. $42^\circ 18'$ E.*), is the largest island in this vicinity and is uninhabited; it is flat and covered with bushes and 30 coarse grass, except at its south-western end where there is a hill formed of coral rock. A reef fringes the northern, eastern, and southern sides of this island, extending to as much as one mile southward of it; foul ground extends about 2 miles north-north-westward of the north-western end of the island, and should be given a wide berth as 35 it is not easily distinguished; from the middle of the northern side of the island a bank, with a least depth of one fathom (1^m8) over it, extends about one mile northward.

- Tulowein islet, $2\frac{1}{2}$ miles northward of Antufash island, is sandy, and lies on a coral reef, which extends $7\frac{1}{2}$ cables south-westward of it and 40 is usually clearly visible.

- A bank, with a depth of 8 fathoms (14^m6), coral, the position of which is approximate, lies about 4 cables from the western coast of Antufash island, and Six Foot rocks, a group of rocks, above and below water, lie about $1\frac{1}{2}$ miles southward of its south-western 45 extremity.

Charts 548; 926, plan of Approaches to Loheiya.

- Merlin shoal, a coral patch lying about $3\frac{1}{2}$ miles south-eastward of Six Foot rocks, has a least depth of $2\frac{1}{2}$ fathoms (4^m6), and Passmore shoal, about 2 miles south-south-westward of Merlin shoal, has a least 50 depth of 2 fathoms (3^m7) over it.

Kadamān Saghīr, $6\frac{1}{2}$ miles southward of the south-eastern point of Antufash island, is a sandy islet, fringed by a reef which extends about $2\frac{1}{2}$ cables southward of it. A bank, with depths of less than 10 fathoms (18^m3) over it, extends $4\frac{1}{2}$ miles south-south-westward and 2 miles

Charts 926, 143, 8d, 2523.

Charts 548 ; 926, plan of Approaches to Loheiya.

westward of this islet ; Hennessey shoal, with a depth of 14 feet (4^m3), lies on the southern part of this bank. Deeny patches, two shoals, with least depths of $3\frac{1}{2}$ and 2 fathoms (6^m9 and 3^m7) over them, lie $1\frac{1}{2}$ miles west-north-westward and one mile north-westward, respectively, of Kadamān Saghīr. 5

Chart 548.

Kadamān Kabīr, $2\frac{1}{2}$ miles south-eastward of Kadamān Saghīr, is a sandy island lying on a reef, which extends 7 cables south-westward and one mile north-north-eastward of it ; its summit, on which are 10 some low bushes, is situated in the middle of the island. Some shoals, with a least depth of 17 feet (5^m2), lie within $1\frac{1}{2}$ miles west-north-westward of the western end of this island.

Chart 926, plan of Approaches to Loheiya.

Kusi islet, 7 cables north-eastward of the north-eastern point of 15 Antufash island, lies on a coral reef which extends 4 cables southward, 2 cables westward, and $3\frac{1}{2}$ cables north-north-westward of it ; a spit, with a depth of 4 fathoms (7^m3) at its northern edge, extends 5 cables northward of the northern extremity of this islet, and a spit, with a least depth of $1\frac{1}{2}$ fathoms (2^m3), extends 5 cables east-south-eastward of 20 its south-eastern side.

Kusi Saghīr, 6 cables south-eastward of Kusi islet, is a sandy islet, 7 feet (2^m1) high, with a few bushes near its centre ; it is fringed by a coral reef, which extends to as much as $1\frac{1}{2}$ cables from it. A spit, with a depth of $1\frac{1}{2}$ fathoms (2^m7) over it, extends $4\frac{1}{2}$ cables southward of 25 Kusi Saghīr (*Lat. $15^{\circ} 43' N.$, Long. $42^{\circ} 31' E.$*), and a 3-fathom (5^m5) patch lies 3 cables eastward of the eastern extremity of this islet.

Bawārid island, $1\frac{1}{2}$ miles east-south-eastward of Kusi Saghīr, is bare, flat, and composed of sand and coral ; its western extremity consists of conspicuous dark cliffs, 10 feet (3^m0) high, and its 22-foot 30 (6^m7) summit is near its eastern end. A coral reef fringes the island, extending to as much as $2\frac{1}{2}$ cables from it ; a shallow rocky bank extends 5 cables westward of the western extremity of this island, and a shallow spit 5 cables east-south-eastward of its eastern extremity. A detached shoal, with a least depth of $1\frac{1}{2}$ fathoms (3^m2) over it, lies 35 about 3 cables southward of the eastern extremity of Bawārid island.

Urmak (Urmek) island, $3\frac{1}{2}$ miles south-south-eastward of Bawārid island, is low and sandy, with one or two palm trees near its centre ; a ruined mosque stands in the middle of the north-eastern side and has a wall resembling a tower, and there is another ruined mosque on the 40 south-western side of this island. The island, which is uninhabited, is fringed by a coral reef, which extends 5 cables south-westward, $2\frac{1}{2}$ cables north-westward, and 3 cables eastward of it ; a spit, with a least depth of 2 fathoms (3^m7) over it, extends 8 cables north-westward of the north-western extremity of the island. A detached coral 45 patch, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, lies 7 cables north-westward of the eastern extremity of Urmak island and 4 cables offshore.

Chart 548.

Anchorage.—There is good anchorage for vessels of moderate 50 size in depths of from 8 to 15 fathoms (14^m6 to 27^m4), well sheltered from the prevailing winds, with the northern summit of 'Uqbān island, bearing 240° , distant 4 cables, but the bottom is coral and the depths very irregular.

Charts 926, 143, 8d, 2523.

Chart 548.

Small vessels with local knowledge can obtain anchorage, somewhat exposed southward, inside the islets off the eastern side of 'Uqbān island.

5 Chart 926, plan of Approaches to Loheiya.

Except in the vicinity of the bank, with a least depth of one fathom (1^m8), there is good anchorage in depths of from 12 to 14 fathoms (21^m9 to 25^m6), mud and sand, about 2½ cables off the northern coast of Antufash island; it is somewhat exposed to north-westerly winds, 10 during which the best berth in this locality is in a depth of 11 fathoms (20^m1), off the middle of the northern side of Kusi Saghir, 2 cables offshore.

Vessels can obtain anchorage anywhere off the north-eastern side of Urmak island. A good berth is in depths of from 8 to 9 fathoms 15 (14^m6 to 16^m5) with the palm tree on Urmak island bearing about 227° and the north-eastern extremity of the island 304°; this anchorage is well protected from southward but is open to north-westerly winds which raise a considerable swell.

During the summer, when the prevalent winds are from between 20 west and north-west, there is good anchorage in a depth of 8 fathoms (14^m6), with Luhaiya Hill fort, bearing 038°, distant 4½ miles.

Small vessels can anchor in the entrance to the bay southward of the town (*Lat.* 15° 42' N., *Long.* 42° 42' E.), about 3½ miles south-south- 25 westward of the same fort.

Small craft with local knowledge can obtain good anchorage in the narrow passage off the town.

Directions.—The western approach to Luhaiya leads between the southern end of Farasān bank, on the western side, Antufash and 30 Bawārid islands, on the northern side, and 'Uqbān island, Merlin shoal and Urmak island, on the eastern and southern sides; the track is indicated by a pecked line on the plan.

A vessel bound for Luhaiya from westward should make a position about 7 miles west-south-westward of 'Uqbān island, and then steer 35 for the summit of that island bearing 075°, until the summit of Antufash island bears 022°, when it should be steered for on that bearing; this latter course should be kept until the northern summit of 'Uqbān island is on a south-easterly bearing, when course should be altered north-eastward to pass north-westward of Merlin shoal. When the 40 summit of Antufash island is on a north-north-westerly bearing Luhaiya Hill fort (*see* view on plan) should be seen midway between Bawārid and Urmak islands; thence a vessel should steer for the fort, bearing 078°, and, when northward of the latter island, steer for the desired anchorage.

45 In thick weather the only marks likely to be useful in this approach to Luhaiya are, the northern extremity of 'Uqbān island, Six Foot rocks, which are black and conspicuous and may resemble the hull of a ship against the grey background of the island, and the palm trees on Urmak island; Antufash, Bawārid, and Urmak islands would 50 probably not be visible beyond a distance of 2 miles, and the two former have no conspicuous features; Kadamān Saghir and Kadamān Kabir would not be visible in thick weather.

Town.—The town of Luhaiya consists of some stone houses, and a large mosque with a conspicuous white minaret.

Charts 926, 143, 8d, 2523.

Chart 926, plan of Approaches to Loheiya.

Small quantities of fresh provisions are obtainable.

Luhaiya has telegraphic communication with Maidi and Hudaida.

Charts 543, 548, 143.

KAMARĀN BAY AND APPROACHES.—Kamarān bay lies between the mainland and the eastern side of Kamarān island; the southern part of the bay is divided into two arms by Mahāsin promontory, of which Ras Harafi is the north-eastern extremity; the western of these two arms is known as Kamarān passage, and the eastern arm is the head of the bay.

Chart 543.

Kamarān island, which is administered for the Indian Government by a Civil Administrator, under the Governor of Aden, is composed of rock and sand, and is mostly low and sandy in appearance, rising a little towards the southern end, where there are four hillocks; the northern part of its eastern side is indented by an inlet, which is entered between Douglas point, one mile south-south-eastward of the north-eastern extremity of the island, and Ras Tuwais (Towiss), $2\frac{1}{4}$ miles farther southward, and extends west-south-westward. A conspicuous white tomb stands on the northern end of the island about 8 cables westward of the north-eastern extremity (*Lat. $15^{\circ} 27'$ N., Long. $42^{\circ} 38'$ E.*).

Charts 543, 548, 143.

Tides.—The rise and fall of the tides is greatly influenced by winds, the level of the water sometimes remaining unchanged for several hours during strong southerly winds.

Charts 548; 926, plan of Approaches to Loheiya.

Northern approach.—**Aspect.**—The northern approach to Kamarān bay is by the Inner channel to westward of Luhaiya, as described on page 369; thence westward of Urmak island, between that island and Kadamān Kabīr, whence a south-south-easterly course leads to the entrance to the bay.

Chart 926, plan of Approaches to Loheiya.

Jahar is a coastal village $5\frac{1}{2}$ miles south-south-eastward of Luhaiya; the coast in this vicinity is a low sandy plain, which probably becomes a swamp in winter.

Charts 548; 926, plan of Approaches to Loheiya.

Between Jahar and Ras Haram, about 3 miles south-south-westward, the coast is fringed by a reef which extends to as much as $1\frac{1}{2}$ miles offshore.

Chart 548.

Ras Haram is a low sandy point fringed with mangroves; within three-quarters of a mile south-eastward of this point are three conspicuous mangrove trees, with a ridge of sandhills, on which stands a white tomb, behind.

From Ras Haram the coast trends about 6 miles south-eastward to the northern entrance to Kamarān bay and is low-lying; it is, in places, fringed with mangroves, and a coral reef extends to as much as $1\frac{1}{2}$ miles offshore.

Western approach.—**Islands and dangers.**—The western approach leads southward of 'Uqbān and Al Baidhā (El Bodhi) islands and north-westward of Kamarān island.

'Uqbān island is described on page 370.

Charts 548, 926, 143, 8d, 2523.

Chart 548.

Clematis shoal, with a least depth of 4 fathoms (7^m3) over it, lies 8 miles southward of 'Uqbān island; owing to the weed on it, it is not very easy to see.

- 5 Dahlia shoal, with a least depth of 11 feet (3^m4), sand and coral, lies 6 miles south-eastward of 'Uqbān island; during strong southerly winds the sea breaks over this shoal which is then visible from a considerable distance.

- 'Uqbān Saghir (Okban Seghir), a sandy islet 7½ miles east-south-10 eastward of 'Uqbān island, is fringed by a reef. It is connected by a shallow bank with Kamarān island, 2½ miles south-eastward; this bank extends 2 miles north-westward of the islet, and there is a 17-foot (5^m2) patch 7½ cables westward of 'Uqbān Saghir.

- Al Baidhā island, 4½ miles northward of 'Uqbān Saghir, is low and15 sandy and bordered by a reef, which extends one mile southward of it. A lagoon, in the entrance to which lies an islet, is situated in the centre of the southern side of the island; small dhows can cross the reef and enter this lagoon, passing westward of the islet.

- A shoal, with a depth of 2½ fathoms (4^m6) over it, lies 5 cables from20 the north-western side of Al Baidhā island (*Lat.* 15° 30' N., *Long.* 42° 30' E.), and a shallow spit extends 6 cables north-eastward of its eastern extremity; Lansdown shoal, with a depth of 1½ fathoms (2^m7), lies about 1½ miles north-eastward of the eastern extremity of Al Baidhā island. Between Lansdown shoal and the shallow spit are25 patches with depths of 4 and 5 fathoms (7^m3 and 9^m1) over them.

North-West patches, a chain of coral patches, with a least depth of 10 feet (3^m0), extend about 2½ miles southward from a position about one mile east-south-eastward of the eastern extremity of Al Baidhā island.

- 30 Endeavour shoal, with a least depth of 8 feet (2^m4) over it, lies 3½ miles north-eastward of the eastern extremity of Al Baidhā island.

Shi'b Badinjān (Shab Bodinjan), a group of coral shoals, 3 miles westward of Ras Haram, have a least depth of 5 feet (1^m5) over them.
Charts 543, 548.

- 35 **Northern part of bay.—Dangers.**—Reefs, which extend to as much as 1½ miles from the eastern side and 3 cables from the western side, border the northern part of the bay.

Chart 548.

- Harrison shoal, with a least depth of 1½ fathoms (2^m7) over it, lies40 3½ miles east-north-eastward of the north-eastern extremity of Kamarān island; north-eastward and eastward of this shoal, between it and the coast, are numerous shoals, the positions of which can best be seen on the chart.

- Wickham patches, a group of shoals, with a least depth of 11 feet45 (3^m4) over them, lie 4 miles eastward of Douglas point.

Chart 543.

Lazaretto shoal, 2½ miles east-south-eastward of Douglas point, has a least depth of 32 feet (9^m8), mud and shells.

Chart 548.

- 50 Barlow patches, 3½ miles north-north-eastward of Ras Harafi, have a least depth of 13 feet (4^m0) over them; Ibn 'Abbās reef, 4 cables eastward of Barlow patches, dries.

Within a distance of 1½ miles north-eastward of Ras Harafi the depths are irregular.

Charts 548, 926, 143, 8d, 2523.

Chart 543.

On the coral reef extending southward of Douglas point, about 5 cables from this point, are three conspicuous dark-coloured islets and a 12-foot (3^m7) high rock. The inlet in the north-eastern part of Kamarān island is divided into two arms, the southern named Khōr Saila (Khor Seila); the northern arm of this inlet is encumbered with reefs, and there are several coral heads and patches in Khōr Saila, which is a good boat harbour. 'Uthmān Rāmiz island (Jezirat Osman Ramiz), 7 cables north-westward of Ras Tuwais, is sandy and covered with coarse scrub; it lies on the coastal reef. 5 10

Ras Hādi ibn Mūsa (Hadi bin Moosa), 10 feet (3^m0) high, is situated 2 miles south-south-westward of Ras Tuwais; on the north-eastern side of this point is Hamidiya (Hamidieh) harbour, the head of which dries out to a distance of about 2 cables. 10

Charts 543, 548.

Shoals, with least depths of 12, 32, and 33 feet (3^m7, 9^m8, and 10^m1) over them, lie about 3½ cables north-north-eastward, 1½ miles northward, and 1½ miles north-north-eastward, respectively, of the northern extremity of Mahāsin promontory (*Lat.* 15° 22' N., *Long.* 42° 42' E.). 15

Southern approach.—Islet and dangers.—Beacons.—Risha 20 islet, 5 miles south-south-westward of Ras al Bayādh, the south-eastern entrance point of the southern entrance to Kamarān passage, is sandy, partially covered with scrub, and, except on its northern side, fringed by a reef, which extends to as far as 3 cables southward of it; a bank, with depths of less than 3 fathoms (5^m5), over which the sea breaks heavily during strong winds, extends 8½ cables south-south-eastward and 5 cables northward of this islet. A tomb, which is only visible from northward, is situated in the centre of the southern part of the islet, and 1½ cables northward of it is a conical steel framework beacon, surmounted by a white sphere, standing on masonry 25 pillars, 41 feet (12^m5) high, painted in black and white horizontal bands. 25 30

Arab shoal, 3 miles south-westward of Ras al Yaman (el Yemen), the north-western entrance point of the southern entrance to Kamarān passage, has a least depth of 16 feet (4^m9), sand and coral. 35

From Ras al Bayādh the coast, which is low and fringed by a reef extending to as far as 2 cables offshore, trends 1½ miles south-south-westward, thence 3 miles south-south-eastward, and 1½ miles eastward to Ras 'Isa, a low sandy point. Some breaks in the coastal reef form boat harbours, where there may be villages. 40

Chart 543.

A square stone pillar, 20 feet (6^m1) in height, painted in black and white horizontal bands, stands on a coral mound, 25 feet (7^m6) high, 7½ cables south-south-eastward of Ras al Bayādh; from southward this beacon is obscured by palm trees until within 2 miles of it. 45

Two steel framework beacons, 27 feet (8^m2) in height, painted red, are situated, one on Ras al Yaman, and the other 3 cables west-south-westward of Ras al Bayādh.

Chart 548.

Anchorage.—Fairly good temporary anchorage can be obtained northward of Risha islet. At night, when in suitable depths, it is better to anchor than to stand on and off, on account of the uncertain currents. There is difficulty in fixing a vessel's position, as it is almost impossible to distinguish the low land. 50

Charts 548, 143, 8d, 2523.

Chart 543.

Kamarān passage.—Kamarān passage is the southern end of the Inner channel on the eastern side of the Red sea.

Aspect.—Quraiya (Koreah), a village on the eastern side of Mahāsin promontory, 3 miles south-south-westward of Ras Harafi, consists of a number of huts and a mosque.

Jabal Mahāsin, on the western side of Mahāsin promontory, about one mile south-westward of Quraiya, with two small round peaks, is conspicuous on a moderately clear day, being the highest ground near the mainland coast. A conspicuous blockhouse, 25 feet (7^m6) in height, stands, at an elevation of 128 feet (39^m0), on the south-western slope of this hill.

Salif village and mosque, on the coast westward of Jabal Mahāsin (*Lat.* 16° 18' N., *Long.* 42° 41' E.), are rarely seen until inside the southern entrance to the bay; there are large rock salt deposits here. A stone pier extends west-south-westward from the shore at the southern end of the village, and there is a depth of 5 fathoms (9^m1) alongside its head; a chimney is situated about half a cable northward of the root of this pier. In 1931, this village and pier were in ruins.

Between Salif and Ras al Bayādh, the coast recedes forming Ghubb Digna (Ghub Dicno); the shores of this bay are low and sandy. Bayādh range, close to the coast, about 4 miles east-south-eastward of Ras al Bayādh, is flat-topped.

Dangers.—**Buoys.**—The shores of Kamarān passage are fringed by reefs, which extend to as much as 5 cables offshore from the western side and 3 cables from the eastern side.

A bank, with depths of less than 3 fathoms (5^m5) over it, extends about 3 cables southward and 9 cables eastward of Ras al Yaman.

Shoals, with a least depth of 2½ fathoms (4^m6), lie on the north-western side of the channel, just outside the edge of the shallow bank extending southward and south-eastward of Ras al Yaman.

The north-western side of the southern entrance to Kamarān passage is marked by two black can buoys, Nos. 1 and 2, each surmounted by a staff and ball, and the south-eastern side of the channel by two red conical buoys, Nos. 1 and 2, also each surmounted by a staff and ball.

A shoal, with a depth of 7 feet (2^m1) over it, lies outside the coastal reef, about 1½ miles north-eastward of Ras al Yaman.

Between Ras al Yaman and Ras Ma'ram (el Maaram), 3½ miles north-north-eastward, there are numerous coral heads on the coastal reef, which dry, between which there are canoe passages at high water.

A conspicuous windmill is situated about 1½ miles westward of Ras Ma'ram.

Chart 543, with plan of Kamaran harbour.

Between Milton point, one mile northward of Ras Ma'ram, and North point, 3½ cables farther north-north-eastward, the coast recedes, forming Kamarān harbour.

Two small piers, which afford good landing for boats, project from the coast 3½ and 6 cables, respectively, north-north-westward of North point.

On the coast between North point and Ras Hādi ibn Mūsa are several groups of buildings. A mosque, with three white domes, is situated one mile north-westward of North point and 3½ cables inland; a conspicuous tower stands 4½ cables south-westward of Ras Hādi ibn Mūsa, and two other towers, which are not so conspicuous, are situated

Chart 543, with plan of Kamaran harbour.

one cable south-westward and 3 cables northward, respectively, of the former tower.

Shoals, with least depths of 32 and 28 feet (8^m5 and 9^m8) over them, lie 2½ cables south-eastward and 3 cables east-north-eastward, respectively, of North point. 5

A shoal, with a least depth of 13 feet (4^m0) over it, lies 5½ cables north-north-eastward of North point (*Lat.* 15° 20' N., *Long.* 42° 37' E.), and is marked on its northern side by a black conical buoy, surmounted by a sphere. 10

A rocky shoal, with a least depth of 18 feet (5^m5) over it, and marked by a black conical buoy, surmounted by a cross, lies 8 cables north-north-eastward of North point; shoals, with depths of 15 and 34 feet (4^m6 and 10^m4), lie about 1½ cables westward and one cable north-north-eastward, respectively, of the 18-foot (5^m5) shoal. 15

A bank, with depths of less than 3 fathoms (5^m5), extends to as far as 5 cables offshore from a position about midway between North point and Ras Hādi ibn Mūsa.

Chart 543.

Tidal streams.—The north-east-going stream in Kamarān passage attains a rate of about 1½ knots at springs, and the south-west-going stream a rate of three-quarters of a knot. Both streams set almost straight through the passage. 20

Charts 543, 548.

The discoloration of the water near Kamarān passage is very noticeable, especially north-eastward when the north-east-going stream is strong, as then an area of light and dark water extends north-eastward sometimes nearly a mile, the light part being right across the channel and the dark part in Ghubb Diqna. This discoloration is not confined to the entrance, but extends to Risha islet, Arab shoal, and well off Ras Ma'ram; the colour gives no indication of the depth, the water being dark-coloured, at times, on the 16-foot (4^m9) patch on Arab shoal, and very light-coloured in depths of 20 fathoms (36^m6). 25 30

Chart 543.

Anchorage.—There is good anchorage in Kamarān bay, the best berth during strong southerly winds being in Ghubb Diqna, off the southern shore of this bay, in depths of from 17 to 20 fathoms (31^m1 to 36^m6), where it is smooth. 35

Chart 543, plan of Kamaran harbour.

Kamarān harbour.—**Light.**—Kamarān harbour is entered between North point and Milton point; the head of this inlet dries out to a distance of about one cable, and banks, with depths of less than 3 fathoms (5^m5), extend to a distance of about one cable from the shores of the harbour. 40

A light is exhibited, at an elevation of 12 feet (3^m7), from an iron column on the western side of the bridge at the head of the harbour. 45

There are two piers on the northern side of the harbour. The eastern or Lazaretto pier, situated about 3 cables eastward of the light-structure, is painted white, and has water laid on to it; there are depths of 2 feet (0^m6) alongside its head, on which stands a flagstaff. 50 The western pier, about one cable westward of the eastern one, is used by dhows; there is a 2-ton crane at its head, alongside which there are depths of 4 feet (1^m2).

Charts 543, 548, 143, 8d, 2523.

Chart 543, plan of Kamaran harbour.

A pier, with a flagstaff southward of it, projects from the town, on the south-western side of the harbour.

Winds and weather.—**Climate.**—The climate of Kamarān (*Lat.* 5 15° 20' N., *Long.* 42° 37' E.) is very healthy, dry, and never excessively hot. Strong winds, often reaching gale force, prevail during the cool season, October to April. During the hot season cool northerly breezes prevail after noon.

Thunder is often heard over the mainland, but rain-bearing thunderstorms rarely reach the island. Sandstorms are experienced, chiefly with westerly and north-westerly winds, but occasionally with north-easterly winds. During August and September electrical disturbances take place, accompanied by strong winds with a little rain from north-eastward and east-north-eastward; these must be guarded against 15 as they occur without warning and a vessel is liable to drag her anchor on to a lee shore, but they are of short duration.

Cyclones are rare, but a severe one was experienced in September, 1936. Sandstorms are common during the hot season.

For Meteorological tables, see page 57.

20 **Anchorage.**—There is good anchorage in a depth of 45 feet (13^m7), with the centre of the bridge at the head of the bay bearing 288°, and the thick chimney, situated close to the coast about 2½ cables westward of the northern entrance point, bearing 353°; this berth affords swinging room of three-quarters of a cable, in depths of not less 25 than 30 feet (9^m1), mud, good holding ground.

Chart 543.

Quarantine anchorage.—The quarantine anchorage is off the coast northward of North point, clear of the dangers, in depths of from 10 to 12 fathoms (18^m3 to 21^m9); its southern limit is shown by 30 a pecked line on the chart.

Provided that there is no infectious disease on board, pilgrim vessels, in order to facilitate clearance, are permitted to anchor opposite and as close as possible to the entrance to Kamarān harbour, this applies particularly in rough weather. See also Regulations given 35 below.

Chart 543, plan of Kamaran harbour.

Quarantine.—The Lazaretto with its disinfecting plant, lighting plant, and radio station stands on the northern side of the harbour. The Civil Administrator of the island is Director of the Lazaretto, 40 which is the main quarantine station for all pilgrims entering Jidda from the East.

The Lazaretto can accommodate about 6,000 pilgrims, and there are resident doctors.

About 38,000 pilgrims, annually, pass through this station.

45 **Regulations.**—Masters of pilgrim ships should inform the Civil Administrator, by radio, the date and approximate hour of arrival, the number of pilgrims on board, the state of health, and whether all pilgrims and passengers on board, without exception, have been inoculated against cholera and vaccinated against small pox.

50 Pilgrim ships must on no account anchor within the harbour before medical inspection has been satisfactorily completed.

On entering Kamarān passage (*Lat.* 15° 20' N., *Long.* 42° 39' E.) vessels must display the distinguishing flags indicating the name of the vessel.

Charts 543, 548, 143, 8d.

Chart 543, plan of Kamaran harbour.

Before medical clearance, exchange of visits between pilgrim ships at anchor is strictly prohibited; guards are placed on board vessels to assist in this matter.

At night, a red light must be exhibited at the masthead of a vessel in quarantine. 5

Standard time.—The mean time of the meridian of 45° E. longitude, or 3 hours fast on Greenwich mean time, is kept at Kamarān.

Town.—The town of Kamarān, on the south-western side of the harbour, has several large brick and stone buildings, and a low mosque, 10 with a small white dome, which is not conspicuous.

There are condensers and ice factories on the northern side of the harbour; two of the buildings have conspicuous chimneys. There are two radio masts about 2 cables north-westward of North point.

Besides the town of Kamarān there are three small villages on the 15 island, the total population, in 1942, being about 2,200.

Communications.—Coasting steamers call frequently.

There is a fortnightly air mail service between Kamarān and Aden.

There is a radio station here; see page 25.

Trade.—Shipping.—The chief exports are charcoal and dried fish. 20

In 1937, vessels totalling 204,508 tons, engaged in the pilgrim traffic, entered this harbour.

Charts 543, 548, 143.

Head of bay.—Aspect.—Ibn 'Abbās, a coastal village, $12\frac{1}{2}$ miles south-south-eastward of Ras Haram, has a mosque, with three or four 25 domes.

The aspect southward of Ras Harafi is described on page 376.

Dangers.—The eastern side of the head of the bay is bordered by a reef which extends to as much as 4 miles offshore, and the western side by a reef extending to as much as 4 cables offshore. 30

Charts 543, 548.

The shoals lying within a distance of $1\frac{1}{2}$ miles northward and north-eastward of Ras Harafi are described on page 375.

Charts 548; 926, plan of Approaches to Loheiya.

Directions (continued from page 369).—From a position about 35 7 miles west-south-westward of Luhaiya a vessel bound for Kamarān bay should alter course gradually southward, passing about $1\frac{1}{2}$ miles westward of Urmak island; when the north-western extremity of this island is on a north-easterly bearing course should be altered south-south-eastward to pass about one mile south-westward of Shi'b 40 Badinjān.

Chart 548.

A vessel approaching Kamarān bay from north-westward should pass about one mile southward of 'Uqbān island and steer eastward until a conspicuous clump of four palm trees on the northern end of 45 Kamarān island can be brought to bear 090° , when she should steer towards them on this bearing until the north-western extremity of 'Uqbān Saghir bears 235° . A vessel should now alter course to 055° , keeping this islet, astern, bearing 235° , until the north-eastern extremity of Al Baidhā island (*Lat.* $15^{\circ} 30' N.$, *Long.* $42^{\circ} 30' E.$) bears 281° ; 50 course should then be altered to 101° and, with this island, astern, bearing 281° , pass between Harrison shoal and the north-eastern extremity of Kamarān island. A vessel can now steer southward into Kamarān bay, keeping about $1\frac{1}{2}$ miles eastward of Kamarān island.

Charts 543, 548, 143, 8d, 2523.

Charts 543, 548.

A vessel approaching the southern entrance to Kamarān passage from north-westward should pass between Arab shoal and Kamarān island; the reef, which fringes the southern end of this island, extends
5 to as much as 3 cables offshore, is fairly steep-to and plainly visible. A vessel approaching from southward should pass eastward of Risha islet and then steer north-north-westward, keeping about one mile from the coast, until the blockhouse south-south-eastward of Jabal Mahāsin bears 060°, when it should be steered towards on that bearing,
10 which leads through the buoyed channel in a least depth of 41 feet (12^m5).

Charts 548, 143.

RAS 'ĪSA TO HUDAIDA.—Coast.—Dangers.—Between Ras 'Īsa and Ras Ketenib, about 17 miles south-eastward, the coast, which
15 is low and sandy and backed by sandhills, forms 'Īsa bay; it is fringed, in places, by coral reefs, which extend to as much as three-quarters of a mile offshore. On the eastern side of Ras 'Īsa is the village of 'Īsa, with a conspicuous three-domed mosque; the depths are irregular within a distance of 4½ miles south-eastward of this village.

20 *Chart 14, plan of Ras Kethib anchorage and Hodeida road.*

From Ras Ketenib, close southward of which stands a conspicuous tree, known as Hadag, the coast trends 5½ miles south-south-eastward to Jubāna (Djebanah), a small village, and thence about 7 miles southward; this part of the coast is low, sandy, and backed by sandhills,
25 with a considerable amount of vegetation.

From a position about 7 miles southward of Jubāna, a peninsula trends about 4½ miles north-westward to Ras al Jadīr (el Jedir) and thence about 3½ miles northward to Ras Kathīb (Kethib); this peninsula forms the south-western and western sides of Khōr Kathīb
30 (Khor Kethib); Ras Kathīb is low and sandy. A railway embankment, which was reported, in 1930, to be rapidly crumbling away, traverses this peninsula. A hill, 52 feet (15^m8) high, on which stands a conspicuous blockhouse, is situated about 1½ miles south-south-westward of Ras Kathīb, and another hill, 26 feet (7^m9) high, on
35 which is a conspicuous black building, stands 8 cables northward of Kitf al Manlahah (Kidf al Manlahah), a point about 3½ miles south-eastward of Ras al Jadīr.

Charts 14, plan of Ras Kethib anchorage and Hodeida road; 143.

A bank, with a least depth of 1½ fathoms (2^m7) over it, extends about
40 2½ miles northward and north-westward of Ras Kathīb, and a bank, with depths of less than 5 fathoms (9^m1), at the western edge of which is a 3-fathom (5^m5) patch, extends about 6 miles westward of this peninsula.

Chart 14, plan of Ras Kethib anchorage and Hodeida road.

45 Sabine rock (*Lat. 14° 50' N., Long. 42° 52' E.*) lies 1½ miles south-south-westward of Ras al Jadīr, and other rocks, which dry, lie between this rock and that point; patches, with a least depth of 13 feet (4^m0), lie within 7½ cables west-north-westward, 5 cables west-south-westward, and 6 cables south-eastward of Sabine rock.

50 A shallow spit, on which there are some patches which dry, extends about 2 miles south-south-westward of Kitf al Manlahah; Ziesel reef, lying on this spit, about 1½ miles south-south-westward of Kitf al Manlahah, dries one foot (0^m3). A 3-fathom (5^m5) patch lies 2 cables

Charts 143, 8d, 2523.

Chart 14, plan of Ras Kethib anchorage and Hodeida road.

southward of the southern edge of this spit, and some detached patches, with a least depth of $2\frac{1}{2}$ fathoms (4^m6), lie within $1\frac{1}{2}$ miles westward and west-south-westward of Kitf al Manlahah.

Khör Kathīb consists of a series of basins connected with each other and the sea by narrow channels. It is encumbered by islets, reefs, and sandbanks, the positions of which can best be seen on the plan; Hajara (Hagarah), about $2\frac{1}{2}$ miles eastward of Ras Kathīb, is a sand cay, with a conspicuous hut on its southern end, and there is a similar cay about $1\frac{1}{2}$ miles south-eastward of the same point. A spit, on which stands a conspicuous crane, extends about 7 cables eastward from a position about 7 cables southward of Ras Kathīb.

Woody islet, about 4 miles east-south-eastward of Ras Kathīb and about 3 cables from the eastern side of the inlet, is thickly wooded, and is conspicuous.

Charts 14, plan of Ras Kethib anchorage and Hodeida road; 143.

From Kitf al Manlahah the coast trends about $1\frac{1}{2}$ miles south-eastward to Hudaïda, and from the southern end of the town in a southerly direction to a point 5 miles distant; it is mostly low and sandy but is backed by a ridge of low hills. A conspicuous white tower stands on the 20-foot (6^m1) summit $6\frac{1}{2}$ cables northward of Hudaïda, and there is a conspicuous blockhouse on Richard hill, close to the coast, $2\frac{3}{4}$ miles south-south-eastward of the town.

Charts 548; 14, plan of Ras Kethib anchorage and Hodeida road; 143.

Off-lying dangers.—Caution.—Owing to the frequent discoloration of the water due to the large amount of sand in suspension, the usual indications of shoal water may be misleading, and no reliance should be placed on seeing any shoals in this locality.

Chart 548.

South-East patches are a group of banks, with a least depth of 41 feet (12^m5) over them, lying within a distance of 12 miles southward of Ras 'Isa.

Detached shoals, with a least depth of 22 feet (6^m7), lie within a distance of $7\frac{1}{4}$ miles south-eastward of 'Isa.

Chart 143.

Lily shoal, with a least depth of $3\frac{1}{2}$ fathoms (6^m4) over it, lies $7\frac{1}{2}$ miles westward of Ras al Jadīr, and is generally discernible; about $1\frac{1}{2}$ miles north-eastward of this shoal are shoals, with depths of 4 and $4\frac{1}{2}$ fathoms (7^m3 and 8^m7), respectively.

Chart 14, plan of Ras Kethib anchorage and Hodeida road.

There are several patches, with a least depth of $4\frac{1}{2}$ fathoms (8^m2), lying from about 5 to 6 miles south-westward of Kitf al Manlahah (Lat. $14^\circ 49' N.$, Long. $42^\circ 55' E.$).

Chart 548.

Anchorages.—There is good anchorage in depths of 8 fathoms (14^m6), sand, well sheltered from northerly and westerly winds, in 'Isa bay, with the mosque in 'Isa village, bearing 270° , distant $1\frac{1}{2}$ miles.

Chart 14, plan of Ras Kethib anchorage and Hodeida road.

There is good anchorage for vessels of moderate draught, in depths of 5 fathoms (9^m1), sand, well protected from southerly winds, northward of the entrance to Khör Kathīb, with the minaret at Hudaïda bearing 160° , and the northern extremity of Ras Kathīb 270° .

A vessel proceeding to this anchorage should approach Ras Ketenib with the conspicuous tree, Hadag, bearing 055° ; when the 52-foot

Chart 548.

(15^m8) high hill on the peninsula bears 162° course should be altered to 090° until Hudaida minaret bears 160°, when a vessel should steer towards it on that bearing and anchor as directed above.

- 5 Khōr Kathīb affords sheltered anchorage to small craft with local knowledge.

Charts 14, plan of Ras Kethib anchorage and Hodeida road; 143.

- Hudaida road.**—Hudaida road affords good protection from winds between north-east and south-east, and Ras Mujāmila, 10 miles south-
10 ward of the town, and the shoals bordering it, break the force of the sea, so that with proper precautions a vessel may ride out a southerly gale here. There is anchorage in depths of 4 fathoms (7^m3), coarse black sand, good holding ground, with the minaret at Hudaida, bearing 069°, distant 3 miles. In settled fine weather small vessels can proceed
15 closer inshore and anchor in any convenient depth.

- A vessel proceeding to this anchorage should give a wide berth to all off-lying shoals and approach with the minaret at Hudaida bearing 069°, which leads through the fairway to the anchorage. Under normal conditions no difficulty should be experienced in distinguishing
20 the town and leading mark.

See view facing this page.

Winds and weather.—During August and September violent squalls blowing off the land and veering quickly southward are frequently experienced in the evenings.

- 25 H.M.S. *Penzance* reported that, in 1934, from May to September, light north-easterly winds prevailed, accompanied by occasional violent squalls and sandstorms blowing off the land; the latter being more frequent during August and September and occurring usually in the evening. From October to April strong south-westerly winds
30 were experienced, causing a heavy swell in Hudaida road and rendering boatwork difficult and dangerous.

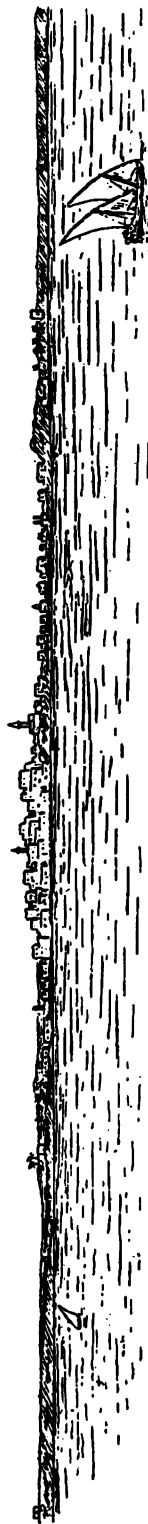
The heat, though great, is bearable, but the humidity is also great.
Chart 14, plan of Ras Kethib anchorage and Hodeida road.

- Inner harbour.**—There is a small boat harbour, protected by a
35 breakwater, at Hudaida (Lat. 14° 47' N., Long. 42° 57' E.); it has a least depth of about 3 feet (0^m9), and is only available for small craft with local knowledge. There are two stone moles here. Landing can be effected at the southern end of the breakwater but, during strong south-westerly winds, the only landing place is on the coast northward
40 of the boat harbour.

- Town.**—Hudaida had a population estimated at about 30,000, in 1942. The houses are high and usually of stone or brick, with flat roofs on which are reed huts. The old town, close to the coast, is surrounded, on its land side, by a wall; outside the wall is a large area
45 covered by thatched houses and sheds. The town is generally unhealthy; in its immediate vicinity are extensive palm groves and gardens, but the surrounding country is sterile. Two forts, one northward and one southward of the town, are falling into ruins; the southern fort is conspicuous from seaward, as are also the minaret of
50 the grand mosque and the cupola of the Government court and offices, which latter building is whitewashed and situated near the coast westward of the minaret. The tomb of Sher Yonis, about 7 cables southward of the southern fort, is a good landmark in the afternoon and evening, appearing almost white; its position is indicated by three
55 palm trees.

Charts 143, 8d, 8e, 2523.

To face page 382.



*Minaret, bearing 070°,
distant 4 miles.*

View of Hudaïda from west-south-westward.

(Original dated 1930.)

Charts 14, plan of Ras Kethib anchorage and Hodeida road.

Fresh provisions can be obtained. A large number of dhows is available for working cargo.

Communications.—There is occasional steamer communication with Aden.

Hudaida is connected with the general telegraph system.

Chart 143.

HUDAIDA TO MOKHA.—Coast.—Dangers.—From the point about 5 miles southward of Hudaida the coast trends about 5 miles south-south-eastward to the eastern entrance point of Khōr Ghulaifiqa and thence $11\frac{1}{2}$ miles south-south-eastward to the head of this inlet; the coast northward of Khōr Ghulaifiqa is fringed by a reef, and a spit, with a least depth of $2\frac{1}{2}$ fathoms (4^m1) near its southern end, extends, from about 5 miles southward of Hudaida, $2\frac{3}{4}$ miles south-south-eastward, to within about $1\frac{1}{4}$ miles of the entrance to Khōr Ghulaifiqa.

Chart 143, plan of Khor Ghulaifiqa.

A sandhill rises to an elevation of about 100 feet (30^m5) three-quarters of a mile north-north-eastward of the eastern entrance point of Khōr Ghulaifiqa, and Shuraim, a coastal village, is situated $2\frac{1}{2}$ miles south-south-eastward of this sandhill.

Chart 143, with plan of Khor Ghulaifiqa.

The western side of Khōr Ghulaifiqa is formed by a peninsula extending about $6\frac{1}{2}$ miles north-north-westward from the head of this inlet and an island, the southern extremity of which lies about one mile north-north-westward of the northern extremity of this peninsula, which extends $5\frac{1}{2}$ miles in a north-north-westerly direction, terminating in Ras Mujāmila; this island is sandy, with a low projection extending east-north-eastward from its north-eastern side. Kitf al Makhāyish (Ketf al Makhayish), a sandhill resembling a haycock, is situated at the south-western end of the peninsula (*Lat.* $14^{\circ} 27' N.$, *Long.* $43^{\circ} 00' E.$).

A spit, with a least depth of $2\frac{1}{2}$ fathoms (4^m6) over it, extends $1\frac{3}{4}$ miles north-westward of the western side of the island described above, and a bank, with depths of less than 5 fathoms (9^m1), extends about $2\frac{1}{2}$ miles from the western side.

Chart 143, plan of Khor Ghulaifiqa.

A shallow spit, with a depth of $1\frac{1}{2}$ fathoms (2^m7) at its eastern edge, extends 5 cables eastward of the low projection extending east-north-eastward from the north-eastern side of this island, and a 3-fathom (5^m5) patch lies 9 cables southward of its eastern extremity.

A shoal, with a depth of $1\frac{1}{2}$ fathoms (2^m7) over it, lies $4\frac{1}{2}$ miles south-south-westward of Ras Mujāmila, and a shoal, with a depth of 5 fathoms (9^m1), about $1\frac{1}{4}$ miles south-eastward of the former shoal.

Chart 143.

A shoal, with a depth of 5 fathoms (9^m1) over it, the existence of which is doubtful, is charted about $8\frac{1}{2}$ miles west-south-westward of the north-western extremity of the peninsula forming the south-western side of Khōr Ghulaifiqa, and a shoal, with a least depth of 6 fathoms (11^m0), lies $5\frac{1}{2}$ miles west-south-westward of the same point.

From close westward of Kitf al Makhāyish the coast trends about 27 miles south-south-eastward to Ras Mutaina and consists of a range of low hills backed by mountains.

Charts 143, 8d, 8e, 2523.

Chart 143.

Al Qā' (Gah), about 12 miles south-south-eastward of Kitf al Makhā-yish, is a large village situated 4 miles inland.

- Kitf Qoraish (Ketf Koreish), about one mile farther southward,
 5 makes as an island from southward, and from a vessel abreast of it
 it still appears to be well clear of the land, probably from its being lower
 and of a darker colour than the coastal hills in the neighbourhood; its
 summit is conical, with a wedge-shaped piece of land close to its north-
 ern side. Though an indifferent landmark, it is the best hereabouts.
 10 Marsa al Majālis, about a mile southward of Kitf Qoraish, is a good
 boat harbour, at the mouth of a small river, sheltered from southerly
 winds by a long spit extending north-westward from the coast. A
 thick grove of palm trees extends a short distance eastward, and
 detached clumps of trees extend northward of this inlet. The high
 15 reeds growing along the river bank are visible from seaward over the
 foreshore.

- Marsa al Fai-is, at the mouth of a stream about $4\frac{1}{2}$ miles southward
 of Marsa al Majālis, is a small creek, used by dhows; reefs and rushes
 encumber the mouth of this stream. There are some trees and bushes
 20 in the valley here. It would be difficult, and even dangerous, to
 attempt to land here with any surf on the coast.

Ras Zabid is situated $1\frac{1}{2}$ miles south-south-westward of Marsa al
 Fai-is.

- Two 5-fathom (9^m1) patches lie about 6 miles north-westward and
 25 4 miles west-north-westward of Ras Zabid, and a rock, with a depth
 of less than 6 feet (1^m8), over which the sea breaks, lies about half a
 mile westward of the same point.

- Three rocks, each with a depth of less than 6 feet (1^m8), over which
 the sea breaks, lie within three-quarters of a mile of the coast, within a
 30 distance of 2 miles north-north-westward of Ras Mutaina (*Lat. 14°
 $00'$ N., Long. $43^\circ 06'$ E.*).

Ras Mutaina, which is reported to lie 2 miles farther eastward than
 charted, is low and rounded.

- Between Ras Mutaina and Mokha, about 41 miles south-south-east-
 35 ward, the coast forms a slight indentation; the depths off this part of
 the coast were reported, in 1912, to be less than those charted. The
 coast is fringed in places by reefs, which extend to as much as three-
 quarters of a mile offshore.

- Qubbat al Himār (Kubbat al Himār) is a small projection of the
 40 coast, on which is a white mosque and a tower; about $2\frac{1}{2}$ miles north-
 westward is another mosque, with two domes, and some palm trees
 near it.

- Zaharī (Sahari), a village $1\frac{1}{2}$ miles south-eastward of Qubbat al
 Himār, consists of a few inconspicuous brown huts and a mosque,
 45 with three domes.

A 5-fathom (9^m1) patch lies $2\frac{3}{4}$ miles westward of Qubbat al
 Himār.

- Al Khauha, a village $2\frac{1}{2}$ miles south-south-eastward of Zaharī, has
 a high tower in it and many white buildings, which are conspicuous
 50 against the dark background of palm trees; two white factories
 and some huts are situated 2 miles south-south-eastward of this
 village.

Maushij (Moshij), a village $6\frac{1}{2}$ miles southward of Al Khauha, has
 some conspicuous buildings, one of which is a large mosque, with a

Chart 143.

cupola and several minarets ; a tower, the position of which is approximate, is situated about three-quarters of a mile south-south-eastward of this village.

Jabal Mūsa, about 8 miles east-south-eastward of Maushij, consists of three small black hills, which must not be confused with the distant high land ; on a south-easterly bearing, Jabal Mūsa appears to have only two peaks. 5

Marsa Fujaim (Mersa Fejera), 7 miles southward of Maushij, is a small inlet, the south-western side of which, formed by a projection of the coast, affords some shelter during southerly winds. 10

A conspicuous white square tower is situated on the coast about 3 miles southward of Marsa Fujaim, and $2\frac{1}{2}$ miles farther south-south-westward stands a similar tower.

Between Marsa Fujaim and Yakhtul (Yochtúl), a village about 9 miles southward, the numerous sand and coral patches near the coast give the sea a dark grey colour. 15

The village of Yakhtul stands at the head of a small shallow inlet, and consists of a few conspicuous white houses, some huts and a mosque ; the latter is not easily distinguished. 20

A 3-fathom (5^m5) patch lies $1\frac{1}{2}$ miles westward of Yakhtul.

On the coast between Zaharī and Mokha, besides the places described above, are numerous villages, all of which have one or two mosques, and usually trees around them.

Chart 143, plan of Khor Ghulaifqa. 25

Anchorage.—Khōr Ghulaifqa affords extensive and sheltered anchorage for small craft, with local knowledge, in depths of from 3 to 4 fathoms (5^m5 to 7^m3), but it is thought to be gradually silting up ; northward of the island there is anchorage in depths of from $3\frac{1}{2}$ to 6 fathoms (5^m9 to 11^m0), sheltered from southerly winds. 30

Chart 143, with plan of Khor Ghulaifqa. 30

Ras Mujāmila (*Lat.* $14^{\circ} 37' N.$, *Long.* $42^{\circ} 55' E.$) is visible from a distance of a few miles only, and a vessel bound for Khōr Ghulaifqa should approach with Hudaida mosque, which is visible from a distance of 13 miles, bearing 045° , which leads north-westward of the off-lying dangers ; a vessel may steer towards the entrance to this harbour with Ras Mujāmila bearing between 100° and 140° , or with the 100-foot (30^m5) sandhill, three-quarters of a mile north-north-eastward of the eastern entrance point, bearing 090° . Kitf al Makhāyish may be identified when approaching from southward. 40

Chart 143.

Al Qā' is an open anchorage, which can be used by small vessels with local knowledge.

Marsa al Fai-is affords anchorage to vessels with local knowledge in depths of $4\frac{1}{2}$ fathoms (8^m2). 45

Anchorage can be obtained by vessels with local knowledge in any convenient depth off the villages standing on the coast between Ras Mutaina and Mokha, but caution is necessary in approaching as these anchorages appear to have been only cursorily examined.

There is anchorage for small vessels with local knowledge off Zaharī, but it is exposed to southerly winds. 50

Small vessels with local knowledge can obtain anchorage during the winter from one to 2 miles northward of Al Khauha, but the holding ground is poor.

Charts 143, 8e, 2523.

Chart 143.

Marsa Fujaim (*Lat. 13° 36' N., Long. 43° 18' E.*) affords anchorage in depths of 3 fathoms (5^m5), sheltered from southerly winds, to small craft with local knowledge.

- ⁵ **Note.**—For a description of the continuation of the eastern side of the Red sea, *see* page 139.

Charts 8e, 2523.

CHAPTER IX

THE COAST OF ARABIA FROM ADEN TO RAS AL HADD

*Chart 1012.***GULF OF ADEN.—Winds and weather.—***See* pages 41-47.*Chart 6b.*

RAS MARSHAQ TO MAQĀTĪN.—Aspect.—Between Ras Marshaq and Ras Sailān (Seilan), about 26 miles north-eastward, the coast recedes forming Ghubbat Sailān (Ghubbet Seilan); it is flat and sandy but rises gradually towards Ras Sailān. A low plain, with numerous sand hummocks, some stunted bushes, and a few low trees, extends some distance inland; the entrances to the ravines are ill defined.

A mountain, 7,246 feet (2,208^m6) high, 36 miles northward of Ras Sailān, is situated at the western extremity of a range which extends about 60 miles eastward, and thence a mountain range of irregular outline continues for about 80 miles in a north-easterly direction; the Yāfa'ī district, north-westward of Ras Sailān, is mountainous, with numerous valleys.

From Ras Sailān the coast, which is sandy, trends about 23 miles north-eastward to southward of Saddle hill, a good landmark about one mile inland, and thence 4 miles east-north-eastward to Shuqra.

A conspicuous flat-topped mountain lies about 5 miles northward of Shuqra; a number of granite hills, some distance inland westward, terminates in a small eminence.

From Shuqra the coast, with a few small projecting points, trends 43 miles eastward to Maqātīn, and is backed by a plain extending to the base of the coastal range; this part of the country is mostly mountainous.

Jabal al Fadhlī, a lofty range, about 5 miles inland, extends about 35 miles eastward from northward of Shuqra; it is broken by peaks and bluff points. The highest part of this range is Jabal al 'Urais (Jebel al Urus), 13 miles east-north-eastward of Shuqra; from south-westward this is easily identified as a sharp peak, but from eastward it is well to the left of the apparently highest part of the range and has a flat or concave summit. The Knob, a conspicuous peak about 14 miles east-north-eastward of Jabal al 'Urais (*Lat. 13° 30' N., Long. 45° 52' E.*), is separated from the main range by a deep cleft and has

Charts 1012, 748b.

Chart 6b.

very steep sides ; more conspicuous from eastward is a barn-shaped summit, 3,950 feet (1,204^m) high, situated 6 miles eastward of the Knob. The mountain valleys are covered with dense vegetation.

- 5 Maqātin can be easily identified by two black hills close eastward of it and near the coast ; other hills, which form Kor ba Habri, are situated about 4½ miles east-north-eastward of Maqātin. From eastward all these hills appear to be one, the highest point being Kor ba Habri, and are a good landmark, especially in hazy weather. Mount
10 Bluff, 8½ miles east-north-eastward of the 3,950-foot (1,204^m) peak, is difficult to identify, as are Mounts Barn and Black Notch, 5 and 13 miles, respectively, eastward of the former.

- Coast.—Dangers.**—A shoal, with a depth of 3½ fathoms (6^m4), mud, lies about 12 miles west-south-westward of Ras Sailān and 2 miles
15 offshore.

- Ras Sailān is a low, round, sandy point, with a few date trees near it. The Banā river, which flows, through Wadi Banā, into the sea at Ras Sailān, is dry during part of the year, but occasionally, during this period, reaches the sea after abnormal floods ; it flows constantly
20 from May to October.

Sheikh Abdullāh is a village on the coast, 1½ miles north-eastward of Ras Sailān ; there are other villages in the vicinity.

- Al 'Asala, 10 miles north-north-eastward of Sheikh Abdullāh and 2½ miles inland, is a deserted town ; south-eastward of this town and
25 close to the coast is the tomb of a sheikh.

Chart 10, plan of Shuqra.

- Barrow rocks, lying from about 5 to 7 miles south-westward of Shuqra and 1½ miles offshore, consist of two rocky heads, with depths of less than 6 feet (1^m8) over them ; there is a channel, with a least
30 depth of 3½ fathoms (6^m4) in it, between these rocks and the coastal reef.

- Shuqra is the capital and principal port of the Fadhli district, which is reported to extend about 80 miles inland. The town is divided by a strip of sand and scrub into two parts, the Sheikh's house and principal buildings being in the eastern part ; the Sheikh's house is a large
35 square brown building, with white upper storeys. A white mosque, with a conspicuous minaret, is situated at the northern end of the eastern part of this town. There is a large date grove in the vicinity, and some salt works stand on the left bank of Wadi Mathwan, close
40 eastward of the town.

A limited quantity of fresh provisions can usually be obtained from Shuqra.

Chart 6b.

- A ruin stands on the coast about 15 miles east-north-eastward of
45 Shuqra, and there is a village 3 miles north-north-westward of the ruin ; a tomb is situated 8 miles eastward of this village. These objects could not be identified, in 1917, when passing 3 miles off this coast.

- A spit extends about one mile south-westward from a point on the
50 coast, 10½ miles eastward of this ruin.

Maqātin Saghīr (*Lat.* 13° 25' N., *Long.* 46° 20' E.) is a boat anchorage, formed by a projecting point 6 miles westward of Maqātin ; a spit, on which lies a rock with a depth of less than 6 feet (1^m8) over it, extends about half a mile south-south-westward of this point.

Charts 6b, 1012, 748b.

Chart 10, plan of Maqātin.

A rocky spit extends about 4 cables southward of Maqātin, and on this spit lie four above-water rocks, which are white from guano, but, in April, 1934, sea birds were settled on them in such numbers as to make these rocks appear black against the sandy coast; a shoal, 5 with a depth of 3 feet (0^m9) over it, lies 3 cables southward of the southernmost rock, and a 4-fathom (7^m3) patch about 6 cables southward.

No trace of a settlement remains here, except a black ruin, like a low heap of stones, situated about 2 cables northward of the inner end of 10 the rocky spit.

Chart 6b.

Current.—During both monsoons a current sometimes sets round Ras Marshaq and northward into Ghubbat Sailān, at rates of from 2 to 4 knots. All vessels, especially those bound westward, should be on 15 their guard against it. Several vessels have, in former times, been wrecked here, and plundered by the natives.

Chart 10, plan of Shuqra.

Anchorage.—**Tidal streams.**—There is good anchorage in depths of from 7 to 9 fathoms (12^m8 to 16^m5) about one mile offshore, 20 with the Sheikh's house at Shuqra bearing 010° and Saddle hill about 280°.

In April, 1934, H.M.S. *Ormonde* approached Shuqra with the Sheikh's house bearing 002° and anchored, in a depth of 8 fathoms (14^m6), on this bearing, with Saddle hill bearing 278°. 25

When approaching Shuqra on a northerly course Saddle hill resembles a dark conspicuous sugarloaf.

A boat harbour, formed by a gap in the coastal reef immediately southward of Shuqra, is clearly visible from seaward.

The tidal streams set westward here with a rising tide. 30

Chart 10, plan of Maqātin.

Small vessels with local knowledge can obtain anchorage, with shelter from north-easterly winds, on the western side of the above-water rocks lying on the rocky spit extending southward of Maqātin.

In April, 1934, H.M.S. *Ormonde* approached with the southern 35 extremity of the northern above-water rock bearing 045° and anchored in a depth of 6 fathoms (11^m0), on this bearing, with the northern extremity of the southern rock bearing 077°, and a sandy spit on the mainland 337°.

The tidal streams set westward here with a rising tide. 40

Chart 6b.

MAQĀTĪN TO RAS AL 'USAIDA.—**Aspect.**—From Maqātin the coast, which is low and sandy, with small rocky points, trends 6 miles east-south-eastward to Sambahiya (Sambahia) and thence about 13 miles eastward to Ras 'Aulaqī (Aulaki), whence it trends 45 about 69 miles east-north-eastward to Ras al Ghusain (*Lat.* 13° 54' N., *Long.* 47° 48' E.). Between Ras al Ghusain and Ras al 'Usaida ('Asida), 21 miles eastward, the coast recedes, forming Ghubbat al 'Ain.

Black hill, about 27 miles north-north-eastward of Ras 'Aulaqī, 50 has two well defined summits, the eastern one being the higher.

Jabal Humairi, about 24 miles east-north-eastward of Black hill, is a rugged range extending about 26 miles east-north-eastward; its

Chart 6b.

summit, when seen from south-eastward or south-westward, is conspicuous and easily identified.

Wadi Maifa'a, an extensive valley, lies at the foot of this range, on its south-eastern side.

Caution.—The coast between Maqātin and Wadi Maifa'a is inhabited by tribes of murderous and piratical habits; care is, therefore, necessary in any dealings with them.

Off-lying shoal.—Dives shoal, lying about 19 miles eastward of Ras 'Aulaqī and $3\frac{1}{2}$ miles offshore, has a depth of $2\frac{1}{2}$ fathoms (4^m6), sand.

Coast.—Dangers.—Sambahiya is a rocky point, and Ras 'Aulaqī is low and sandy.

The town of Ahwar, situated 5 miles north-westward of Ras 'Aulaqī on a broad plain with high mountains northward, is a series of villages, only the tops of the houses being visible from a passing vessel; it is the principal residence of the Sheikh of the 'Aulaqī tribe.

The 'Aulaqī district extends about 50 miles along the coast from Maqātin to Wadi Sanam, and is reported to extend to as much as 200 miles inland; the boundary between the Eastern and Western Aden protectorates reaches the coast at Wadi Sanam. The coastal plain is low, but about 35 miles inland is a high mountain range of very irregular outline.

Al Hauta is situated on the coast close eastward of Ras 'Aulaqī, and about 3 miles eastward stands a large square tower with a few houses near it.

The tomb of Sheikh Hurba is situated on the bare sandy coast about 23 miles east-north-eastward of Ras 'Aulaqī; it appears to be of a dark brown colour and is conspicuous within a distance of 12 miles offshore.

Wadi Sanam cannot be distinguished beyond a distance of from 3 to 4 miles offshore.

'Irqa (Arqa) village, about 17 miles east-north-eastward of the tomb of Sheikh Hurba, is small, and has a mosque which is not conspicuous; a small square tower, standing on the coast about 2 miles eastward of the village, is a good landmark when it has been identified. The village, mosque, and tower all stand on a low, round, sandy projection.

Ras Safwān, a slightly projecting point, $14\frac{1}{2}$ miles north-eastward of the square tower, is thinly covered with bushes on its outer end.

Haura, a village 2 miles north-eastward of Ras Safwān, has two square towers, each about 50 feet (15^m2) in height, standing on a mound.

Jabal Makanati, $3\frac{1}{2}$ miles east-north-eastward of Haura, is a projecting bluff of whitish appearance, veined by dark strata; it terminates in sandhills, with a rock, over which there is a depth of less than 6 feet (1^m8), close south-westward of it.

Ras Safwān (*Lat. $13^{\circ} 48' N.$, Long. $47^{\circ} 36' E.$*), Haura village, and Jabal Makanati, are good landmarks, especially in hazy weather, but are somewhat difficult to identify, particularly if the sun is northward of the vessel and in their direction.

The district of the Dhuyaib (Diyabi) tribe extends along the coast from Wadi Sanam to Ras al Ghusain, and inland northward of the Jabal Humairi range.

Ras al Ghusain is low, rounded, and sandy.

Charts 1012, 748b.

Charts 10, plan of Bal-haf; 6b.

The north-eastern side of Ghubbat al 'Ain is fringed by a shallow bank, which extends to as much as 5 cables offshore, and some rocky patches lie about 6 cables offshore in this vicinity.

The villages of 'Ain Bā Ma'bād (Ain Abu Má bad) and 'Ain al Juwairi are situated about 2 and 1½ miles inland, respectively, from the north-eastern side of Ghubbat al 'Ain; there is a mosque in the former village. These villages, as there are others in their vicinity, are difficult to identify from a distance. Jil'a is a village on the coast 5½ miles east-south-eastward of 'Ain al Juwairi. 5

Chart 10, plan of Bal-haf.

Ras al 'Usaida rises, about 3 cables inland, to a conspicuous, dark, rocky, conical hill; three small rocky points project from this headland, which is steep-to. Black Barn is a hill situated about 4 cables inland, 2 miles northward of the south-western extremity of the headland. 10

Bālihāf (Bal-haf), a small town at the head of a small bay on the western side of Ras al 'Usaida, is very conspicuous from westward but not visible when bearing less than 040°; the town has a conspicuous tower, with a smaller tower close southward of it, and there is also a tower near the coast, 4 cables northward of the town. 15

Chart 6b.

Anchorage.—Small vessels with local knowledge can obtain anchorage in the slight indentation formed by the coast between Ras Safwān and Jabal Makanati. 25

Chart 10, plan of Bal-haf.

There is good anchorage, sheltered from easterly winds, in the small bay on the western side of Ras al 'Usaida; a good berth is, in depths of 9 fathoms (16^m5), with the conspicuous tower in Bālihāf, bearing 077°, distant about 2 cables. 30

Charts 6a, 6b.

RAS AL 'USAIDA TO RAS MUKALLA.—Aspect.—From Ras al 'Usaida the coast trends about 30 miles eastward to Ras al Kalb, and is low and sandy for a distance of about 13 miles westward of the latter point. 35

A peak, situated 10 miles north-westward of Ras al Kalb, near the south-western end of a mountain range, is steep on its north-western side, and is conspicuous from west-south-westward; from southward it has the appearance of being the westernmost summit of this range. 40

From Ras al Kalb the coast trends about 39 miles north-eastward to Mukalla (*Lat.* 14° 31' N., *Long.* 49° 07' E.), the first part being very barren and forbidding in aspect, with sandhills extending some miles inland; the purple-veined mountains in the interior, whose summits in the cold season are at times covered with snow, have an equally forbidding appearance but are relieved by a very irregular outline of peaks and bluffs, rising almost precipitously to elevations of from 2,000 to 4,000 feet (609^m6 to 1,219^m2). The valleys, however, are well cultivated and beautiful.

Currents.—The current off the coast between Ras al Kalb and Mukalla sets to some extent towards it. 50

The current close outside Bandar Burūm, about 22 miles north-eastward of Ras al Kalb, sets continuously north-eastward.

Charts 6b, 3784, 1012, 748b.

Chart 6b.

Off-lying islet.—Sikhā islet, lying $12\frac{1}{2}$ miles eastward of Ras al 'Usaida and 5 miles offshore, has a humpbacked appearance, and its summit is white with guano ; it is steep-to.

- 5 **Coast.—Islets and dangers.**—The coast between Ras al 'Usaida and Ras Maqdaha, 16 miles eastward, is very irregular, with many projecting points and small bays ; Ras ar Ratl, 4 miles eastward of Ras al 'Usaida, is a conspicuous round volcanic promontory of considerable elevation, with apparently an extinct crater in the middle ;
- 10 Jabal Husn al Ghūrāb, about 5 miles east-north-eastward of Ras ar Ratl, is a black square-shaped hill, 456 feet (139^m0) high, with steep sides, and some ancient ruins on its summit.

- Halāniya (Halania) islet, lying about half a mile southward of Jabal Husn al Ghūrāb, is composed of rocky limestone ; several rocky
- 15 points project from this islet, and a bank, with a least depth of 2 fathoms (3^m7) over it, extends about 4 cables from its eastern side.

- Bandar Husn al Ghūrāb (Husn al Ghorāb), on the north-eastern side of Jabal Husn al Ghūrāb, is free from dangers in its western part,
- 20 and the bottom is mostly sand, with rock in places ; the eastern part of this bay is encumbered with a reef, with depths of less than 6 feet (1^m8) over it. Bīr 'Alī, a village, in which stands a square tower, is situated at the head of this bay, and there are several other villages near it.

- 25 Sha'rān, about 3 miles east-north-eastward of Jabal Husn al Ghūrāb, is a circular table-topped sandstone hill, with a crater full of salt water, called Kharif Sha'rān, the edge of which is fringed by overhanging mangroves, which enables it to be identified ; this crater is about $1\frac{1}{4}$ miles across, and the Arabs report that its depths are too great for
- 30 sounding. Ras Khada is a rocky point at the foot of this hill.

Ghadharain (Ghutdhrin) islets, two in number, lie close offshore south-eastward of Ras Khada ; there is a navigable passage between these islets and the coast, but the channel between the islets almost dries.

- 35 Maqdaha bay is entered between the eastern Ghadharain islet and Ras Maqdaha ; this bay is free from dangers, with the exception of a rock, with a depth of less than 6 feet (1^m8) over it, lying at the centre of the head of the bay, about 5 cables offshore. Maqdaha village, situated in the eastern angle of the bay, is small and the residence of
- 40 a Sheikh, who is a tributary to the Sultan of the 'Abd al Wāhid tribe ; the district of this tribe extends inland to the mountains from Ras al Ghusain (*Lat.* 13° 54' N., *Long.* 47° 48' E.) to Ras Rujaima (Rahmat), 59 miles east-north-eastward.

- Ras Maqdaha, on the western side of which stands a square white
- 45 tower, is a dark, moderately high promontory, and is the termination of a broken range of hills extending 10 miles inland ; this tower is conspicuous from eastward when a vessel is northward of the line of tower bearing 290°.

- Barāqa islet (Jezirat Borrāka), lying about 4 cables southward of
- 50 Ras Maqdaha, consists of limestone rock, and is precipitous ; its summit is a crater, which is white with guano. From southward this islet appears square, with a flat summit and steep side ; from eastward or westward it appears to slope from its southern cliff to the summit at the northern end.

Charts 3784, 1012, 748b.

Charts 6a, 6b.

Ras al Kalb (*see view facing page 400*), which is low, round, and sandy, is not easily seen at night, but warning of approach to the coast in this vicinity can be obtained by constant sounding.

Kalb village, about 3 miles north-eastward of Ras al Kalb, is situated behind sandhills, in a large break in the coastal range; there is a large fort at the western end, and several tall houses at the eastern end of the village; there is considerable vegetation and a brackish lake in the vicinity. East-north-eastward of the village, on a hillock, stands a grey stone tomb which, although not conspicuous, is useful for identifying Ras Rujaima close eastward of it.

Ras Rujaima is composed of limestone and has a dark peaked outline; on its south-western side the sand from the plain has been blown into a great heap by the south-west monsoon. Ras Rujaima is conspicuous, being the commencement of the bold dark precipitous land extending to within 15 miles of Mukalla.

Ras al Husa al Hamra (Assassa or Asr al Hamra), 6 miles north-eastward of Ras Rujaima, is rocky, and a rugged range of hills extends some distance inland from it (*see view facing page 400*).

Al Ghaidha is a town situated about 2 miles inland amongst luxuriant date groves in the valley between Ras Rujaima and Ras al Husa al Hamra.

Between Ras al Husa al Hamra and Ras al Himār, a low bluff $3\frac{1}{2}$ miles north-eastward, is a small bay, with a village at its head. *Charts 10, plan of Bandar Burum; 6a, 6b.*

Ras Burūm, the eastern extremity of which is situated about 6 miles north-eastward of Ras al Himār, attains an elevation of about 1,100 feet (335^m3), and is composed principally of limestone; it is bold, dark, and craggy. A rocky spit extends 3 cables eastward of Ras Burūm, and on it, close off the point, lies a rock above water. *Chart 10, plan of Bandar Burum.*

Bandar Burūm, the shores of which are fringed by a reef, is entered between Ras Burūm and Radham bluff, $1\frac{1}{2}$ miles north-north-westward; Burūm, a small town on the western shore of this bay, near its northern end, is surrounded by date trees and is situated at the foot of a range of hills which extends to the coast in this vicinity.

A small quantity of fresh provisions can be obtained. Tobacco and dates are the chief products. A brisk trade is done during the south-west monsoon when Burūm (*Lat. $14^{\circ} 20' N.$, Long. $48^{\circ} 57' E.$*) becomes a port of refuge. *Charts 10, plan of Mukalla bay; 6a.*

From Radham bluff the coast, which is low, sandy, and backed by high mountains, trends about 14 miles north-eastward to Mukalla, and thence about $2\frac{1}{2}$ miles east-south-eastward to Ras Kodar, the south-eastern extremity of Mukalla promontory; there are no off-lying dangers, but it is fringed by a shallow bank which extends to as far as one mile offshore.

Chart 6a.

Fūwa, a village situated about half a mile inland and $8\frac{1}{2}$ miles north-eastward of Radham bluff, has a conspicuous white house in it, and two dome-roofed tombs in the north-eastern part of the village. There are some palm trees between the village and the coast.

Chart 10, plan of Mukalla bay.

Mukalla promontory, at the north-western end of which is the town

Charts 6a, 3784, 1012, 748b.

Chart 10, plan of Mukalla bay.

of Mukalla, is hilly; the hills, which extend inland, slope down to within a short distance of the coast, which is low; Jabal al Qāra (Jebel al Kara) is situated about 3 cables northward of the north-
 5 western end of the town. Ras Marbāt is the south-western extremity of this promontory, and on it are the ruins of a fort, which are not easily seen, and two conspicuous white houses close together; on the coast, midway between Ras Marbāt and Ras Kodar, is a white tomb which is not conspicuous; Ras Mukalla, about 3 cables north-eastward
 10 of Ras Kodar, is the eastern extremity of this promontory.

Along this coast the sea, when smooth and calm, is very clear; the bottom is then plainly visible in depths of from 12 to 15 fathoms (21^m9 to 27^m4).

Charts 10, plan of Mukalla bay; 6a.

15 Mukalla bay is the north-eastern part of the bight between Fūwa and Ras Marbāt. About 1½ miles north-westward of Ras Marbāt are two small bays, separated by a projection on which stands part of Mukalla town.

Chart 10, plan of Mukalla bay.

20 The western part of the western of these two bays is filled by a reef, which extends to a distance of about 3 cables offshore, and shelters this bay from westward.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies 1¼ cables eastward of the south-eastern extremity of the projection separating the
 25 two bays, and there are depths of less than 3 fathoms (5^m5) within a distance of 1½ cables from the head of the eastern bay. There is a swell in this bay during the north-east monsoon.

Rocky bank, lying about 3¼ cables southward of Ras Kodar, has a least depth of 3¾ fathoms (6^m9) over it.

Chart 6b.

Anchorage.—Directions.—Small vessels with local knowledge can obtain anchorage on either side of Ras ar Ratl.

There is moderate shelter from easterly winds for small vessels with local knowledge off the western side of Halāniya islet.

35 Small vessels with local knowledge can obtain anchorage in depths of 4 fathoms (7^m3), about 2½ cables offshore, in the western part of Bandar Husn al Ghūrāb; during the south-west monsoon a vessel should anchor farther westward with Jabal Husn al Ghūrāb (*Lat.* 13° 59' N., *Long.* 48° 19' E.) bearing about 180°. From westward a
 40 vessel should pass southward of Halāniya islet in depths of not less than 20 fathoms (36^m6), and then steer northward into the bay passing about one mile eastward of this islet to avoid the shallow bank extending from its eastern side; care must be taken to avoid the reef in the eastern part of the bay. If coming from eastward a vessel must
 45 not close the eastern entrance point within a depth of 17 fathoms (31^m1), and care must be taken to avoid the reef in the eastern part of the bay before altering course for the anchorage.

Maqdaha bay affords good anchorage, sheltered from easterly winds, to small vessels with local knowledge; a good berth is, in a depth of
 50 8 fathoms (14^m6), sand, with the square white tower on the western side of Ras Maqdaha bearing 055°, distant 3 cables. This tower forms a good leading mark.

Charts 6a, 6b.

A small bay on the south-western side of Ras Burūm affords indiffer-

Charts 6a, 3784, 1012, 748b.

Charts 6a, 6b.

ent anchorage to small vessels with local knowledge in depths of from 3 to 7 fathoms (5^m5 to 12^m8).

Chart 10, plan of Bandar Burum.

Bandar Burūm affords safe anchorage during the south-west monsoon, but is open to easterly and north-easterly winds. The tomb, marked on the plan about a mile westward of the coast abreast the southern end of the town, is not visible when entering the bay from southward, but there is a large tomb or mosque, southward of it, and higher on the hill-side, which is visible; the tomb marked on the plan is visible when entering the bay from northward, but both are obscured by hills in front of them, when near the anchorage. Landing is at times difficult on account of the surf and rocks on the beach.

There is anchorage, during the south-west monsoon, in depths of from 5 to 7 fathoms (9^m1 to 12^m8), good holding ground, south-eastward of Burūm, but a ground swell rolls in.

Anchorage was obtained during the north-east monsoon, in 1881, in a depth of 7 fathoms (12^m8), about 2 cables offshore, with the southern side of this town bearing 280° and the eastern extremity of Radham bluff 008°; the wind is rarely sufficiently strong to make this anchorage dangerous, though at times vessels roll considerably.

Good anchorage was obtained, in 1918, in depths of 11 fathoms (20^m1), with the southern side of a brown house, situated a little southward of the large tomb previously mentioned, a white square house being between them, in line with a small tomb on the beach, bearing 284°, the outer end of the rocks, awash, off Ras Burūm, 163°, and a large conspicuous white house in the middle of the front village, which is apparently southward of the town marked on the chart, 310°.

Chart 10, plan of Mukalla bay.

There is anchorage in suitable depths off the north-western side of Mukalla bay.

A stone jetty, close to the Custom house, is the usual landing place.

Tidal streams.—The tidal streams in Mukalla bay (*Lat. 14° 31' N., Long. 49° 07' E.*) set south-westward with a rising tide.

The s.s. *Soekaboemi*, which anchored here, in October, 1927, reported that after lying to a weak west-going stream, the east-going stream set in suddenly with considerable strength, causing her to drag her anchor so that she grounded.

Light.—A light is exhibited, at an elevation of 15 feet (4^m6), from a house near the coast at the south-western extremity of the town of Mukalla. It is private and unreliable; in 1930, it was reported to be non-existent, and, in 1932, H.M.S. *Penzance* reported that a light was exhibited, at a height of 8 feet (2^m4), from a boat moored about half a cable westward of this house, but that the light was indistinguishable from the lights of the town and dhows anchored in the vicinity.

Town.—Mukalla is, next to Aden, the principal port on the southern coast of Arabia; the town is built partly on the rocky projection, and partly close northward of it, on the northern side of the bay; the latter part stands in terraces on a slope, at the base of a range of reddish limestone cliffs about 300 feet (91^m4) high, surmounted by four conspicuous white towers, which rises immediately at the back of the town. The northern part of the town is enclosed on the western side by a wall extending from the cliff to the coast, with only one entrance gate; the

Charts 6a, 3784, 1012, 748b.

Chart 10, plan of Mukalla bay.

Governor's house is a large square building ; the others are chiefly huts, intermingled with stone houses and two mosques. The houses in the southern part are of stone. The population was estimated, in 5 1942, to be about 16,000.

There are two towers about 4 cables west-north-westward of the town, which are inconspicuous, and another tower $4\frac{1}{2}$ cables north-westward of them. The immediate vicinity of Mukalla is particularly barren, but about a mile inland, westward of the town, are large date 10 groves and gardens.

Limited supplies of fresh provisions can be obtained.

Communications.—There is regular steamer communication with Aden, India, and the Persian gulf.

Standard time.—The standard time kept at Mukalla is that of 15 the meridian of $48^{\circ} 45' E.$ longitude, or 3 hours 15 minutes in advance of Greenwich Mean Time.

Trade.—A considerable trade is carried on with India, the Somali coast, the Red sea, and Muscat. The exports are chiefly gums, hides, senna, and a small quantity of coffee ; the imports are chiefly cotton 20 goods, metals, crockery, and rice from Bombay ; dates and dried fruits from Muscat ; coffee, maize, and millet from Aden ; sheep, aloes, frankincense, coffee, and dye from Berbera and other African ports.

During the south-west monsoon, a considerable portion of the trade 25 is diverted to Bandar Burūm, which is then a secure anchorage.

Chart 6a.

RAS MUKALLA TO RAS QUSAIYIR.—**Aspect.**—From Ras Mukalla (*Lat.* $14^{\circ} 30' N.$, *Long.* $49^{\circ} 09' E.$) the coast trends 2 miles northward to the head of Bandar Ruwaini and thence about 40 miles 30 east-north-eastward in an almost unbroken line of low sand to the cliffs of Hāmi.

Charts 10, plan of Sharma ; 6a.

Between the eastern end of the cliffs at Hāmi and Ras Sharma, about 9 miles eastward of Hāmi, the coast recedes forming Sharma 35 bay ; from Ras Sharma the coast, which presents a succession of limestone and chalk cliffs rising almost vertically to elevations of from 300 to 400 feet (91^m4 to 121^m9), trends $7\frac{1}{2}$ miles eastward to Ras Baghashwa, and from thence the coast, which is low and sandy, trends $12\frac{1}{2}$ miles east-north-eastward to Ras Qusaiyir.

40 It was reported, in 1944, that Ras Sharma lies about $3\frac{1}{2}$ miles east-north-eastward of its charted position.

Chart 6a.

A high range of mountains extends eastward from northward of Mukalla ; it lies parallel with and at right angles to the coast, from 10 to 45 15 miles inland.

Jabal Dhuba (Jebel Dheba), about 20 miles east-north-eastward of Ras Mukalla and one mile inland, is a good landmark, being isolated, oblong, and table-topped.

Charts 10, plan of Ash Shihr ; 6a.

50 Jabal Dhabdhab (Jebel Yucalif or Dthabdtal), on which stands the remains of a wall and terrace, is a conspicuous isolated hill about $12\frac{1}{2}$ miles east-north-eastward of Jabal Dhuba and 3 miles inland.

Charts 6a, 3784, 1012, 784b.

Chart 6a.

Jabal al Hamūm, a sandhill, is situated 7 miles north-north-westward of Ras Baghashwa ; there are a few trees on this summit and on the sides of the mountains, otherwise the country is barren and uncultivated.

Coast.—Islets and dangers.—Light.—Between Ras Mukalla and Ash Shihr, about 29 miles east-north-eastward, the coast is free from dangers.

Ar Rukaib (Rakab), a village $3\frac{1}{2}$ miles north-north-eastward of Ras Mukalla, has a large and ancient mosque.

Buweish village stands in a valley surrounded by date groves about 3 miles north-eastward of Ar Rukaib and $1\frac{1}{2}$ miles inland.

Ash Shuhair, on the coast about 12 miles east-north-eastward of Ar Rukaib, is in ruins ; an old fort near this village is conspicuous.

A light, for the use of aircraft, is exhibited from a beacon situated about 2 miles east-north-eastward of Riyan, a village 4 miles westward of Ash Shuhair.

Sūq al Basīr, a small town about 4 miles northward of Ash Shuhair, has some mosques which are visible from seaward.

Charts 10, plan of Ash Shihr ; 6a.

Zaghtal (Zaghfa) is a village near the coast, about $7\frac{1}{2}$ miles eastward of Sūq al Basīr, and Marīr is a ruin, about $3\frac{1}{2}$ miles farther east-north-eastward.

Chart 10, plan of Ash Shihr.

Ash Shihr (*Lat.* $14^{\circ} 45' N.$, *Long.* $49^{\circ} 34' E.$), a small town on the coast, situated about $2\frac{1}{2}$ miles east-north-eastward of Marīr, is surrounded by a high bastioned wall ; a castle, the residence of the governor, stands on an eminence, and is conspicuous from seaward ; other prominent buildings are the Custom house and a mosque with white domes. Limited quantities of fresh provisions are obtainable.

A shoal, with a depth of $5\frac{1}{2}$ fathoms (10^m) over it, the position of which is approximate, was reported, to lie about $1\frac{1}{2}$ miles southward of the Custom house at Ash Shihr.

Chart 6a.

The coast is free from dangers between Ash Shihr and the western entrance point of Sharma bay.

Quraidh (Kuridh), a ruin, is situated close to the coast 5 miles east-north-eastward of Ash Shihr.

Hāmi, a village 7 miles east-north-eastward of Quraidh, is situated in a ravine at the foot of a dark double hill, with a date grove and cultivated ground in its vicinity. Limited quantities of fresh provisions can be obtained here.

Charts 10, plan of Sharma ; 6a.

Husu al Musaina'a (Husn al Musain'a), an old ruined fort, stands on a rocky hill $4\frac{1}{2}$ miles west-north-westward of Ras Sharma ; Dis is a walled town 2 miles north-north-eastward of Husu al Musaina'a, and Thaubān (Thubba), a village 3 miles farther northward ; Al Qarn (Karn) is a village on the north-eastern side of Sharma bay, $1\frac{1}{2}$ miles north-north-westward of Ras Sharma.

Chart 10, plan of Sharma.

From a position 6 cables north-eastward of Ras Sharma the Mashār Sabir hills; with South-East bluff at their southern end, trend northward for about 7 cables, rising to North-West bluff at their northern end.

Charts 6a, 3784, 1012, 748b.

Chart 10, plan of Sharma.

Jezirat Sharma is a rocky islet, 3 cables westward of Ras Sharma, and some rocky patches lie about 3 cables offshore, 6 miles eastward of this cape.

Chart 6a.

About midway between Ras Sharma and Ras Baghashwa is the village of Dhafghan, which lies in a gap in the cliffs, fronted by a sandy beach; the land here is cultivated.

On Ras Baghashwa, which is rocky, are some conspicuous ruins, lying close to the cliffs.

Asadi al Faya is a small Bedouin village situated in an oasis about 2 miles inland and 5 miles westward of Ras Qusaiyir; Al Qurain is a straggly village about $1\frac{1}{2}$ miles west-north-westward of the same point.

Chart 10, plan of Ras Qusaiyir.

A rocky shoal, parts of which dry, extends about 4 cables southward of the southern extremity of Ras Qusaiyir, a low rocky cape; on this shoal are two rocky islets lying close to the coast, about 2 cables west-north-westward of the cape.

Qusaiyir, one mile north-north-eastward of Ras Qusaiyir, is a small town, walled on three sides; a square fort, in ruins, with a date grove adjacent, is situated about 3 cables north-north-westward of the town (Lat. $14^{\circ} 54' N.$, Long. $50^{\circ} 17' E.$).

Chart 6a.

Anchoragees.—Tidal streams.—Bandar Ruwaini affords anchorage, with shelter from the south-west monsoon, to small vessels with local knowledge, in depths of from 4 to 6 fathoms (7^m3 to 11^m0); the depths increase rapidly seaward.

Chart 10, plan of Ash Shihr.

There is anchorage in Ash Shihr roads in depths of from 7 to 12 fathoms (12^m8 to 21^m9), sand and shells, from 7 cables to one mile offshore; this anchorage is an open one.

Chart 6a.

Small vessels with local knowledge can obtain anchorage off Hāmi, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), about one mile off shore.

Chart 10, plan of Sharma.

There is good anchorage in Sharma bay, in depths of from 4 to 5 fathoms (7^m3 to 9^m1), with Ras Sharma, bearing 157° , distant about 5 cables; also off Al Qarn village, where small vessels with local knowledge can lie safely, in depths of from 2 to 4 fathoms (3^m7 to 7^m3); the latter anchorage is most frequented.

The tidal streams set westward here with a rising tide.

Chart 6a.

Small vessels with local knowledge can obtain anchorage off Dhafghan.

Chart 10, plan of Ras Qusaiyir.

There is an open anchorage in depths of from 12 to 14 fathoms (21^m9 to 25^m6) southward of Ras Qusaiyir; there is also anchorage, in depths of 7 fathoms (12^m8), westward of this cape, but the depths decrease rapidly towards the coast. A heavy surf is always running, and landing is difficult.

Boats can obtain shelter eastward of the two islets lying about 2 cables west-north-westward of Ras Qusaiyir, also under the lee of a reef which is situated about 7 cables north-eastward of this cape.

Charts 6a, 3784, 1012, 748b.

Charts 6a, 3784.

RAS QUSAIYIR TO RAS FARTAK.—Aspect.—From Ras Qusaiyir the coast, which is low, sandy, and uncultivated, trends about 35 miles east-north-eastward to a point about one mile southward of Tanum. Between Tanum and Ras 'Iqab ('Akab), about 30 miles east-north-eastward, the coast is almost straight, with a low coastal ridge which shows black against the sandy mountains inland; the highest points of this ridge are Black peak and Cone, situated 5 miles westward and 6 miles north-eastward, respectively, of Tanum. 5

From the coast the land rises gradually to the mountain ranges extending eastward and westward of Wadi Masila (Musaila), which flows into the sea 10½ miles west-south-westward of Ras 'Iqab. 10

Among the most conspicuous features on this coast is a series of three horizontal effusions of black basalt on the plains between Raida, a town 12 miles north-eastward of Ras Qusaiyir (*Lat. 14° 54' N., Long. 50° 17' E.*), and Wadi Masila; these are called *Harik* (*Burnt place*) by the Arabs. Each has one or more cones about 100 feet (30^m5) above the level of the surrounding ground and, around each cone, for a varying extent, is a low field or tract of basalt, so strikingly defined by its blackness and the light colour of the plain over which it has spread that, but for its being unattended by any active signs of volcanic eruption, it might be taken for a semi-fluid mass of lava. 15 20

In the middle of the first tract, in the vicinity of Raida, are four cones, and this effusion, having taken place over ground for the most part about 100 feet (30^m5) high, has found its way into the water-courses and appears at their openings on the coast in black rocks, contrasting strongly with the white limestone on each side. The plains of the lower mountains here also appear to be darkened, perhaps by ashes ejected from the cones or craters; there is hardly any trace of vegetation and the heat in May is almost insupportable. 25 30

The next cone is opposite Wadi Shaikhāwī (Sheikhaur), about 9 miles eastward of the last and about 3 miles inland. 30

Chart 3784.

The easternmost cone is about 4 miles westward of Saihūt, a town 8 miles westward of Ras 'Iqab; its effusion extends nearly to Wadi Masila eastward and joins with that of the cone westward. 35

Jabal Asad is situated about 16 miles north-north-westward of Black peak; Wadi Shaikhāwī, south-westward of Jabal Asad, can be easily identified by a conspicuous gap in the mountains which encompass it, about 11 miles north-westward of Black peak. 40

Wadi Masila is the continuation of Wadi Hadhramaut and is used for communication between the coast and the inland towns; on each side of the entrance is a ruined fort. Wadi Masila is the largest valley opening on this coast and appears to divide the mountainous land into separate tracts; the sides of this valley are high and their summits are usually obscured by clouds; in the valley are numerous villages and date palms. 45

Chart 3784, with plan of Qishn bay.

From Ras 'Iqab the coast trends about 21 miles east-north-eastward to Ras Shurwain, the eastern extremity of a promontory. 50

A conspicuous conical peak is situated about 1½ miles westward of Ras Shurwain, and on the western shoulder of this peak stand the Asses Ears, two conspicuous sugarloaf peaks close together, which show their characteristic feature when bearing less than 022° and are

Charts 1012, 748b.

Chart 3784, with plan of Qishn bay.

obscured when bearing less than 295° . Behind this conical peak the land rises gradually in a narrow wedge-shaped formation, with numerous peaks and ravines, until it joins the coastal range.

5 *Chart 3784.*

Jabal Jaihūn, a detached dark mountain, 12 miles north-north-westward of Ras Shurwain, is conspicuous from south-eastward and eastward.

Ras Darja (*Lat. $15^{\circ} 27' N.$, Long. $51^{\circ} 53' E.$*), about $13\frac{1}{2}$ miles east-
10 north-eastward of Ras Shurwain, is formed of precipitous cliffs from 200 to 400 feet (61^m0 to 121^m9) high; the sea breaks on it with great force during the south-west monsoon and has formed large caves at its base, which is of limestone formation.

Jabal Hadīm, about 6 miles north-north-westward of Ras Darja, is
15 a long round-topped ridge with no conspicuous features.

Between the cliffs of Ras Darja and those of Ras Fartak, about 21 miles east-north-eastward, the coast is low and sandy, sandhills rising gradually to a high range of hills inland; it is barren except for some stunted bushes and cultivated patches near the villages.

20 From Ras Fartak the land rises to Fartak range which extends westward of it. Next to Ras Sājir (Sajar), about 103 miles north-eastward, this is the highest and largest promontory on this coast. See view facing page 401.

Caution.—Ras Shurwain and Ras Darja are similar in appearance; each has a large quantity of sand blown up on the western side of the hills, and, as the currents in this vicinity are somewhat variable, care must be taken in thick weather not to mistake one for the other.

Chart 6a.

Off-lying shoal.—Palinurus shoal, lying about 23 miles eastward
30 of Ras Qusaiyir and $8\frac{1}{2}$ miles offshore, is a patch of rock and coral, with a least depth of $2\frac{1}{2}$ fathoms (4^m6) over it.

It is advisable to avoid the vicinity of this shoal, either by keeping well inshore, or keeping an offing of not less than 12 miles; the depths around this shoal are irregular.

35 *Charts 6a, 3784.*

Coast.—Danger.—The depths off the coast, for a distance of about 23 miles east-north-eastward of Ras Qusaiyir, are irregular and the bottom rocky, causing overfalls. These irregular depths, also Palinurus shoal, described above, appear to be connected with the volcanic
40 effusions described on page 399; such irregularities in the bottom of the sea do not exist anywhere else off this coast.

Chart 6a.

A round tower at Harra, a village $5\frac{1}{2}$ miles north-eastward of Ras Qusaiyir, is conspicuous, and there are numerous date trees near Sarār,
45 a village 2 miles farther north-eastward.

Raida, $4\frac{1}{2}$ miles north-eastward of Sarār and about one mile inland, is a small town; a large white watch tower stands on the coast close westward of the town, and indicates the landing place. A ruined fort, Husn al Kathiri, is situated 2 miles north-north-westward of this town.

50 Musaina'a, 12 miles eastward of Raida, is the site of a large ruined ancient town; the land in its vicinity is swampy, with numerous mangrove trees.

Chart 3784.

Sharkhāt, a village on the coast 12 miles east-north-eastward of

Charts 3784, 1012, 748b.

To face page 400.



(a)

Ras al Kalb,
bearing 292°
distant 31 miles.

(Original dated 1906.)

Ras al Husa al Hamra.



(b)

Ras Burūm,
bearing 298°
distant 17 miles.

Two views of south-eastern coast of Arabia between
Ras al Kalb and Ras Burūm.

(Original dated 1904.)



*Ras Fartak
bearing 280°, distant 25 miles.*

White limestone cliffs.

Ras Fartak.
(Original dated 1904.)

Chart 3784.

Tanum, is deserted ; Darfüt, a village, with a date grove, is situated $6\frac{1}{2}$ miles eastward of Sharkhât.

Saihüt, a town on the coast $3\frac{1}{2}$ miles east-north-eastward of Darfüt, has some stone houses and mosques. 6

Ras 'Iqab (*Lat. $15^{\circ} 13' N.$, Long. $51^{\circ} 20' E.$*) is high, red, sloping, and rocky.

Between Ras 'Iqab and Ras 'Atâb, 7 miles east-north-eastward, are two bluffs, Ras Rakhwât and Ras al Kâfir, and some small bays, with sandy beaches, which afford shelter for small boats during the north-east monsoon. 10

Ras 'Atâb is moderately high, but terminates in a low point which forms the western entrance point of Bandar 'Atâb.

The town of 'Atâb, situated about 3 miles north-north-eastward of Ras 'Atâb, has three mosques, the western one of which has a minaret ; 15 there is a date grove about one mile westward of this town.

Bandar 'Atâb, a slight indentation between Ras 'Atâb and Ras Shurwain, affords a little shelter from north-easterly winds ; with a fresh sea breeze there is a considerable surf on the coast. The coast here is sandy and rises gradually inland ; in places the sand is blown 20 high up on the hills.

Chart 3784, with plan of Qishn bay.

Qishn bay is entered between Ras Shurwain and Ras Darja, both of which are steep-to ; the coast here is low and sandy, with a high range of hills a few miles inland and a barren tract of undulating sandhills 25 between. During the north-east monsoon there is a heavy ground swell and surf on the coast, which renders landing dangerous except in a cove close westward of Ras Darja.

The village of Qishn, $4\frac{1}{2}$ miles northward of Ras Shurwain, has only a few inhabitants. The Sultan of the Mahrah tribe, who is also the 30 ruler of Socotra island, resides here.

Chart 3784.

As Sûq, near which is a salt water lagoon and a few date trees, is situated on the coast 2 miles east-north-eastward of Qishn ; the village of Hafât, about 2 miles farther east-north-eastward, is buried under 35 sand.

Khôr Maghshi, about $4\frac{1}{2}$ miles north-north-eastward of Ras Darja, is a small salt water lake which was formerly connected with the sea.

A rock, with a depth of less than 6 feet ($1^m 8$) over it, lies 3 miles north-north-eastward of Ras Darja and one mile offshore. 40

Saqr, a village close to the coast, is situated in a date grove about 4 miles east-north-eastward of Khôr Maghshi ; a large white mosque stands on a low cliff south-south-westward of this village.

About 3 miles east-north-eastward of Saqr stands a fortified house at the western end of another village. 45

Huswain is a village on the coast $9\frac{1}{2}$ miles east-north-eastward of Saqr ; some date trees stand near this village.

Khaisât (Khaisaib) is a village standing near the mouth of the valley at the base of the high land on the western side of Ras Fartak ; about $1\frac{1}{2}$ miles northward of Khaisât are some date groves, with 50 Dhekrabait village on their eastern and the village of Kadifut on their western side.

Wadi town, with three or four forts, lies farther up the valley just mentioned ; Khaisât is the port of this town and does a considerable amount of trade. 55

Charts 1012, 748b.

Chart 6a.

Anchorage.—There is no safe anchorage off Raida (*Lat.* 15° 02' N., *Long.* 50° 26' E.), there being depths of 20 fathoms (36^m6) within 2½ cables of the beach, and close inshore is a deep hole, probably an ancient crater, with depths of from 120 to 125 fathoms (219^m5 to 228^m6) and depths of from 20 to 40 fathoms (36^m6 to 73^m2) around it. In 1931, H.M.S. *Ormonde* anchored in a depth of 12 fathoms (21^m9), black mud, about 2½ cables offshore, with the centre of Raida bearing 333°.

10 *Chart 3784.*

The anchorage off Saihūt is an open roadstead ; a good berth is, in depths of 5½ fathoms (10^m1), mud, with a large white house in the town bearing 315°, and the southern extremity of the promontory of which Ras Shurwain is the eastern extremity, bearing about 070°, and a little

15 open southward of Ras 'Iqab.

Chart 3784, plan of Qishn bay.

Bandar Lask, the south-western part of Qishn bay, affords the best anchorage in this bay. A good berth is, in depths of from 4 to 5 fathoms (7^m3 to 9^m1), about 7½ cables offshore, with Ras Shurwain bearing 158° and a tomb situated 2 miles north-westward of this cape bearing 270° ; during the south-west monsoon vessels lying here are well sheltered and in comparatively smooth water, but in other parts of the bay a heavy swell then sets in.

Chart 3784.

25 Small vessels with local knowledge can obtain good anchorage, with complete shelter from the south-west monsoon, between Ras Darja and the sunken rock 3 miles north-north-eastward of it.

Vessels with local knowledge can anchor off Khaisat ; this anchorage is much used by coasting craft.

30 **RAS FARTAK TO RAS SĀJIR.**—**Aspect.**—From Ras Fartak cliffs extend about 8 miles northward, rising vertically to elevations of about 1,900 feet (579^m1), thence they become lower and irregular, being about 50 feet (15^m2) high at Khōr Khalfūt, 14 miles north-north-westward of Ras Fartak, and terminate at the sandy coast fronting Tābūt, a village 5 miles farther northward ; these high cliffs are by far the boldest escarpment on the south-eastern coast of Arabia, being vertical from base to summit for 6 miles northward of the cape.

No part of these heights has any vegetation except near the summit, and there chiefly on the western side where the land slopes gradually to the plain. The barrenness of Fartak range generally, as well as that of the surrounding district, seems to indicate that the rains of the south-west monsoon do not fall on this coast.

From a position about 30 miles southward of it, Ras Fartak appears like an island with a gap in the middle ; it is supposed to be the ancient *Syagros*, from its resemblance to a boar's head, when seen from distances of between 20 and 30 miles, from south-westward or eastward.

See view facing page 401.

Between the high land of Fartak and Jabal al Fatk (Falik), about 57 miles northward of Ras Fartak (*Lat.* 15° 38' N., *Long.* 52° 16' E.), the sandy coast is backed by a low plain, and high land in the interior ; Jabal al Fatk, which approaches the coast closely about 55 miles north-north-eastward of Ras Fartak, extends westward until it joins the Fartak range. Eastward of Jabal al Fatk the 'Atūb range and

Charts 3784, 1012, 748b.

Chart 3784.

Jabal Qamr (Jebel Qamar) extend eastward, the latter range approaching the coast closely at Ras Sājir; Jabal Qamr, although apparently sterile from a distance, is covered with trees from base to summit.

There is scarcely any signs of cultivation along this stretch of the coast. 5

Coast.—Danger.—Ghubbat Qamr (Ghubbet Qamar) lies between Ras Fartak and Ras Sājir.

The coast between Ras Fartak and Tābūt has several rocky projections; the small bays between these projections appear to be free from dangers. 10

Ras al Fantass (Fintá), 9 miles northward of Ras Fartak, is a bluff about 200 feet (61^m0) high, surmounted by a conical hill; here the high land recedes from the coast and trends north-westward.

About 2 miles northward of Ras al Fantass is a low bluff point forming the northern entrance point of a small sandy bay on the shore of which stands the village of Nishtūn. 15

Khōr Khalfūt is a creek about 2 cables long, with depths of 6 feet (1^m8) in it; boats of from 30 to 40 tons are hauled up here during the south-west monsoon. 20

From Khōr Khalfūt the coast trends about 21 miles northward to eastward of Al Ghaidha, which is the largest town on the shores of Ghubbat Qamr and stands 2 miles inland. The villages of Tābūt, Hairut (Herut), and Harāiq (Heraiyak) lie about one mile within this part of the coast; Hairut is situated 2 miles northward of Tābūt, 25 and Harāiq, 13 miles north-north-eastward of Hairut. Between Tābūt and Hairut is a small saddle-shaped hill.

From eastward of Al Ghaidha the coast, which is low, trends about 20 miles north-eastward to south-eastward of Al Jauhari (Jowhari), a white tomb, about 4 miles inland, with a few huts near it; Qabr Qailūl (Kabr Khaihul), about 8 miles north-north-eastward of Al Ghaidha, is a tomb situated on the coast, with some date trees in its vicinity; the village of 'Airūb (Eirub) is situated 3½ miles north-eastward of Qabr Qailūl and about one mile inland. 30

The coast, from south-eastward of Al Jauhari, trends about 65 miles east-north-eastward to Ras Sājir and is almost straight; mountains rise abruptly behind it, and there are occasional small patches of sandy coast. 35

Wadi ash Shagawāt (Shaghut) lies between Jabal al Fatk and 'Atūb range; the former range terminates in a sandhill at the coast, and the latter, about 1½ miles farther eastward, in a dark bluff point. About 7 miles south-eastward of the mouth of this valley are depths of over 100 fathoms (182^m9), and overfalls occur close within these depths. 40

Damghūt (Damqut), the only port in Ghubbat Qamr, is situated on an irregular plain, about 8 miles east-north-eastward of the mouth of Wadi ash Shagawāt (*Lat.* 16° 32' N., *Long.* 52° 42' E.), in a valley at the western end of Jabal Qamr, with almost inaccessible mountains around it except towards the coast; on the western side of this plain is a salt water lagoon with a few date trees round it, and on a cliff immediately over the town stands a ruined fort. 45

A reef, over which the sea breaks, extends 1½ cables from the coast fronting Damghūt; there is good landing on the eastern side of this reef, when the south-westerly swell is not very heavy, though at the same time the western side may be almost unapproachable. 50

Chart 3784.

Jadhib (Jodab), 9 miles east-north-eastward of Damghūt, is a village built under some projecting rocks; about 2 miles farther in the same direction lie Hauf village and tower, the residence of a sheikh.

- 5 Ras Dharbat 'Ali, $3\frac{1}{2}$ miles eastward of Hauf, is a small rocky point, about 200 feet (61^{m0}) high; about 3 miles north-north-eastward of this point is a bluff, 3,950 feet (1,204^{m0}) high, which is very conspicuous from south-westward. Ras Dharbat 'Ali marks the boundary between the Aden protectorate and the territory of the Sultan of Muscat.
- 10 Thalfut, 10 miles east-north-eastward of Ras Dharbat 'Ali, is a grove of date trees; Al Kharifūt (Kharfut), a fertile valley, with a village at its mouth, lies 4 miles east-north-eastward of Thalfut.

- Rakhūt (Rakhuit), 5 miles east-north-eastward of Al Kharifūt, is a village situated in the valley of Khais bin 'Umar; a similar valley,
- 15 Khais bin 'Uthman (Khais-at-bin-Othman), lies 3 miles farther eastward, with the village of Safūt (Safut) at its mouth.

- Ras Sājir is steep, and rounded, and attains an elevation of 2,770 feet (844^{m3}); the summit of the range here is a level tableland 3,380 feet (1,030^{m2}) high. The eastern side of Ras Sājir is vertically scarped
- 20 but is not so high as its south-western side, as the strata dips eastward. The south-western side descends in three or four large steps to the coast, the ledges of which are so narrow that the summit can be seen when only half a mile from the base. The bluff of this cape rises vertically from the sea, and is steep-to.

- 25 **Current.—Tidal streams.**—The current which begins to set east-north-eastward along the south-eastern coast of Arabia early in April is apparently deflected north-north-eastward near Ras Fartak towards the coast about Damghūt in Ghubbat Qamr; its average rate is $1\frac{1}{2}$ knots. During the north-east monsoon it runs in the opposite
- 30 direction at a rate of one knot.

There are very weak tidal streams between Khor Khalfūt and 'Airub, in Ghubbat Qamr, which are accompanied by strong ripples in places.

Winds and weather.—See page 405.

- Anchorage.**—Anchorage can be obtained, during offshore winds,
- 35 in any part of Ghubbat Qamr, where the depths are convenient, but there is no shelter in this bay.

Small vessels with local knowledge anchor off Al Ghaidha, from February to April, about one mile offshore; the bottom is sandy. Small quantities of fresh provisions can be obtained from Al Ghaidha.

40 *Charts 3784, 3785.*

- RAS SĀJIR TO RAS MARBĀT.—Aspect.**—Between Ras Sājir (Lat. $16^{\circ} 45' N.$, Long. $53^{\circ} 35' E.$), and Ras Hamar (al Himar), 24 miles east-north-eastward, the coast which is rocky, recedes slightly, forming Ghubbat Fazaija; Ras Rīsūt is $3\frac{1}{2}$ miles east-north-eastward
- 45 Ras Hamar, and Bandar Rīsūt is on the northern side of Ras Rīsūt. From the northern side of Bandar Rīsūt the coast trends about 41 miles eastward to Ras Marbāt (Merbat); it is low and sandy as far as Tāqa (Thaka), $23\frac{1}{2}$ miles east-north-eastward of Ras Rīsūt, whence it is cliffy.

- 50 From a position about 10 miles northward of Ras Rīsūt, Jabal as Samhān extends about 73 miles eastward to Jabal Nūs. The coast from Ras Rīsūt to Dahārīz (Diriz), 10 miles east-north-eastward, is a succession of green fields, coconut groves, and buildings, with a range

Charts 1012, 748b.

Charts 3784, 3785.

of mountains in the background ; there is no cultivation on the coast between Dahārīz and Tāqa, the ground being swampy and covered with mangroves.

Dhufār (Dhofar) plain is bounded on the west by the high land within Ras Hamar, on the east by Jabal as Samhān near Tāqa, and on the north by the curve of that range ; it is the largest of the lowland tracts between the coast and the mountains, and is one of the most fertile districts on the south coast of Arabia.

Jabal Dū'an or Marbāt peak (Jebel Doa-an or Merbat peak), situated $5\frac{1}{2}$ miles northward of Ras Marbāt, is a conspicuous peak of the Jabal as Samhān range, which range closely approaches the northern shore of Marbāt bay, terminating abruptly in cliffs, about 100 feet (30^m5) high.

Winds and weather.—From about the middle of June the south-west monsoon blows strongly and raises a heavy sea ; the premonitory swell of the monsoon begins to roll into Ghubbat Qamr early in April, causing a heavy surf on the coast. During this season most of the inhabitants of the coastal plains retire to the mountains. From June to September it occasionally blows from northward for some days, and in July and August this wind sometimes brings swarms of locusts.

The low-lying coastal plains, of which the majority consists of sandy desert and basaltic formations, are very hot, and during the south-west monsoon the atmosphere of Dhufār plain is most oppressive. In the lower valleys the air is stifling by day and very damp at night, and near the sea is moist and steamy.

Jabal Qamr and Jabal as Samhān are often completely enveloped in cloud for weeks, and natives report that the sun is often not visible for days. This may account for the extremely fertile nature of these hills and the remarkable growth of trees and tall green grass.

Chart 3784.

Coast.—Islets and dangers.—A rocky islet lies close offshore, $8\frac{1}{2}$ miles north-eastward of Ras Sājir ; a rock, with a depth of less than 6 feet (1^m8) over it, lies close southward of this islet, and a similar rock close northward of it.

Charts 3784, 3785.

Ras Hamar (*Lat. 16° 54' N., Long. 53° 58' E.*) is a rocky bluff of irregular hills projecting from the high mountain range within the coast ; on the summit of this bluff is a conspicuous needle-shaped peak, with a notch between it and a smaller peak.

Chart 3784, plan of Bandar Risūt.

Ras Risūt is a rocky bluff, about 100 feet (30^m5) high, composed of white and grey limestone, much scarped, and very irregular near its summit ; on it are the ruins of a small round tower, and farther inland on the ridge is an ancient cemetery.

Three rocky islets lie within a distance of one cable eastward of Ras Risūt.

A tower, the position of which is approximate, is situated about $6\frac{1}{2}$ cables westward of the same point.

A white rock lies close offshore about one mile north-westward of Ras Risūt.

Charts 3784, 3785.

There is usually a surf breaking on the coast between Bandar Risūt and Ras Marbāt even in calm weather ; the best method of landing is

Charts 3784, 3785, 1012, 748b.

Charts 3784, 3785.

to use a ship's boat to the limit of the surf and then transfer to local craft, which will always come out.

- 5 Auqad (Okkad) is a village about $4\frac{1}{2}$ miles north-north-eastward of Ras Risūt, with a salt water lagoon in its vicinity ; Abkad, is a village about half a mile farther north-eastward, with a fresh water lake in its neighbourhood.

Salāla, the principal trading centre of Dhufār, 3 miles eastward of Auqad and half a mile inland, is a town with stone houses and is sur-
10 rounded by groves of coconut trees ; the cultivation here gives the coast a fresh green appearance from seaward. A white fort stands on the coast fronting the town ; the best landing is here. The Governor of the district resides at Salāla. Small quantities of fresh provisions can be obtained here.

- 15 Al Hāfa, about three-quarters of a mile south-eastward of Salāla, is a village surrounded by groves of coconut trees and cultivated ground ; there is a conspicuous white fort on the beach here.

Al Bilād, about one mile eastward of Al Hāfa and separated from it by cultivated ground, stands in ruins round a small hill, about 100 feet
20 (30^m5) high ; close eastward is a fresh water lake, thickly covered with bulrushes, which is reported to have depths of about 7 feet (2^m1) in dry seasons, but its entrance has silted up. This site may be identified by the hill and ruins at the eastern end of a large grove of coconut trees.

- 25 Ar Ribāt (Al-Robat), about one mile east-north-eastward of Al Bilād, is in ruins ; there is a mosque here.

Dahārīz, a village close to the coast, has several watch-towers around it ; on its western side lie some cotton fields and a grove of coconut
30 trees. A salt water lagoon is situated close eastward of this village and $2\frac{1}{2}$ miles beyond it is a ruined fort.

The village of Tāqa, situated about three-quarters of a mile inland, is built of mud and stones ; westward of this village are groves of coconut trees and cultivated ground.

- Khōr Tāqa (Khor Thaka) and Khōr Sulei, a little westward of Tāqa
35 (*Lat. $17^{\circ} 02' N.$, Long. $54^{\circ} 25' E.$*), are fresh water lakes. Khōr Rūri (Khor Reiri), $2\frac{1}{2}$ miles eastward of Tāqa, is probably fresh in its upper part but near the coast is brackish, and has a perceptible tidal rise and fall ; it is separated from the sea by a narrow ridge of sand and, it is reported, that formerly boats could enter it.

- 40 The coast between Tāqa and Marbāt is a succession of limestone cliffs about 100 feet (30^m5) high, Jabal as Samhān range rising gradually from about one mile inland. The inhabitants for the most part dwell in caves, some of which are large and, as these are usually situated on precipices facing the sea, their positions may sometimes be distinguished
45 at night by their lights.

Chart 3785, plan of Merbat bay.

Marbāt bay lies northward of Ras Marbāt, and its shores are fringed by a reef which extends to as much as 2 cables offshore.

- A reef extends one cable westward of Ras Marbāt and on this reef,
50 about half a cable from the point, is a detached rock, which dries ; a detached shoal, with a depth of one fathom (1^m8) over it, lies 2 cables north-westward of this point.

A ruined tomb is situated 3 cables east-south-eastward of Ras Marbāt, but it is only visible when approaching from westward.

Charts 3784, 3785, 1012, 748b.

Chart 3785, plan of Merbat bay.

Jabal 'Ali, a conspicuous hill, is situated about $1\frac{1}{2}$ miles north-north-eastward of Ras Marbāt and one cable inland.

The town of Marbāt (Merbat) is situated on the eastern shore of the bay, about three-quarters of a mile north-eastward of Ras Marbāt, and consists of a number of stone houses and huts; a Wali, who governs the town, resides here. A fort, with a flagstaff in front of it, stands near the coast at the northern end of the town, and close south-eastward of it is a white mosque with a dome; about $1\frac{1}{2}$ cables south-westward of this mosque and near the western end of the town is another fort, the residence of the Wali; about half a cable southward of the mosque is a narrow lagoon extending about one cable eastward. Marbāt has a considerable trade.

Landing can be effected in the shelving sandy bay southward of the former fort, taking care to avoid three rocky ledges, which dry, lying close offshore westward of the fort; landing can also be made northward of these ledges. Landing is impossible during the south-west monsoon.

Chart 3784, plan of Bandar Rīsūt.

Anchoragees.—Directions.—Bandar Rīsūt affords good shelter during south-westerly or westerly winds, with anchorage in depths of from $3\frac{1}{2}$ to 5 fathoms (6^m4 to 9^m1). The best berth is, in depths of from $3\frac{1}{2}$ to 4 fathoms (6^m4 to 7^m3), about 4 cables from Ras Rīsūt and in line between it and the white rock.

Charts 3784, 3785.

Good anchorage may be obtained, generally, in depths of from 5 to 7 fathoms (9^m1 to 12^m8), about 8 cables off the coast between Bandar Rīsūt and Marbāt bay.

Anchorage has been obtained, in depths of 6 fathoms (11^m0), with the white fort at Salāla bearing 350° , distant 8 cables; and also, in depths of $3\frac{1}{2}$ fathoms (6^m4), with the fort bearing 337° , distant 4 cables.

Anchorage has been obtained in depths of 6 fathoms (11^m0), off Al Hāfa (*Lat.* $17^\circ 01' N.$, *Long.* $54^\circ 07' E.$), about $1\frac{1}{2}$ miles offshore; in 1931, anchorage was obtained in depths of 3 fathoms (5^m5), sand, with the white fort here bearing 015° , distant $3\frac{1}{2}$ cables.

Chart 3785, plan of Merbat bay.

Marbāt bay affords good sheltered anchorage, except from winds between south and west. The best anchorage is in depths of from 7 to 8 fathoms (12^m8 to 14^m6), off the town, with Ras Marbāt, bearing 186° , distant about 7 cables.

Charts 3784, 3785.

Jabal Dū'an (page 405), bearing not less than 012° , is the best landmark for identifying Marbāt. A sugarloaf peak, apparently about 8 miles eastward of Jabal Dū'an and near the eastern end of the same part of the range, is also a good landmark, but it is not so high as the rest of the range; this latter peak, bearing 057° , leads to the anchorage in Marbāt bay.

RAS MARBĀT TO RAS ASH SHARBATĀT.—Aspect.—From Ras Marbāt the coast, which is low, rocky, and irregular, trends about 20 miles eastward to the south-eastern entrance point of Bandar Qinqari (Bander Jenjeli), and thence 21 miles north-eastward to Ras Nūs; it is backed by the Jabal as Samhān range.

Sellha plain, extending eastward from Marbāt bay, between the

Charts 3784, 3785, 1012, 748b.

Charts 3784, 3785.

coast and the foot of Jabal as Samhān range, to Ras Nūs, is mostly low and barren, but on it there are a few hills of moderate elevation ; near Ras Nūs is a ravine, with some date trees, through which a stream runs after heavy rain.

Jabal Qinqari (Jebel Jenjeli), about 2 miles north-north-westward of the south-eastern entrance point of Bandar Qinqari and one mile inland, is conical and conspicuous, and is composed of limestone traversed by veins of chalk and gypsum ; Jabal Musaira, 14 miles north-eastward of Jabal Qinqari, is of similar formation to the latter mountain.

About $5\frac{1}{2}$ miles north-eastward of Jabal Musaira and one mile west-south-westward of Ras Nūs, Jabal Nūs, more conspicuous than Jabal Musaira, especially when viewed from eastward, forms the eastern extremity of the Jabal as Samhān range ; its highest and most precipitous part, resembling a bluff, is nearest the coast. Between Jabal Musaira and Jabal Nūs is a valley, in which is some brushwood.

Chart 3785.

Between Ras Nūs and Ras ash Sharbatāt (Sharbitat), 76 miles east-north-eastward, the coast, which consists mostly of steep cliffs, recedes forming Kuria Muria (Khorya Morya) bay ; the Kuria Muria (Khorya Morya) islands, lying in the approach to this bay, about 22 miles from its northern shore, are mostly bold and rocky, rising in regular conical peaks.

The coast about Ras Hāsik, about 10 miles north-north-eastward of Ras Nūs, presents a striking scene, comprised of the unbroken limestone mountains, with the sharp peaks of the granite ranges, of which Jabal Habrūt, 4 miles north-north-westward of Jabal Nūs (*Lat.* $17^{\circ} 14' N.$, *Long.* $55^{\circ} 16' E.$), is 4,000 feet (1,219^m2) high ; this part of the coast has a barren appearance from seaward, no vegetation being visible, but, when on shore, the valleys are seen to be well wooded and watered.

Between Ras Hāsik and Ras Muntajib, about 18 miles north-north-eastward, the coast recedes a little forming Ghubbat ad Daum (Ghubbet al Dom) ; this part of the coast is backed by a high precipitous tableland intersected by three conspicuous valleys.

The steep cliffs terminate $7\frac{1}{2}$ miles northward of Ras Muntajib and the high land recedes from 2 to 3 miles and, after continuing parallel with the coast, again approaches it at the high dark point of Shauwāmiya (Shuwamiya), 22 miles north-eastward of Ras Muntajib, a bluff headland, which must not be confused with Ras ash Shauwāmiya (Shuwamiya), $9\frac{1}{2}$ miles eastward.

From the dark point of Shauwāmiya the coast, for a distance of 26 miles eastward, is formed of steep cliffs backed by a tableland, from 600 to 800 feet (182^m9 to 243^m8) high. About 2 miles eastward of Ras Minji, which is situated about $12\frac{1}{2}$ miles eastward of Ras ash Shauwāmiya, the cliffs gradually decrease in elevation for a distance of about 2 miles, where they terminate about one mile inland ; thence the coast is low and sandy for a distance of about 7 miles eastward, whence it is cliffy as far as Ras ash Sharbatāt.

50 Charts 3784, 3785.

Caution.—Owing to the imperfect nature of the survey mariners are warned that great care must be taken when navigating between Ras Marbāt and Ras as Sauqara (Sukra), 130 miles east-north-eastward.

Winds and weather.—The south-west monsoon is strongest and

Charts 1012, 748b.

Charts 3784, 3785.

the sea heaviest between Ras Marbāt and the island of Masīra, especially in Kuria Muria bay and in the month of July. During this period the ordinary Arab traders do not go to sea; the larger craft do so early in June, after the first burst of the monsoon, and also 5 toward the end of August, when they consider the monsoon finished.

During the south-west monsoon season there is always a long southerly swell on the Arabian coast, but the sea is not usually so heavy inshore as further seaward. The weather at this period is generally very hazy, though the sky is clear, and the land, consequently, not visible until quite close inshore, so that it is necessary to sound continuously. During November and December a strong north-easterly breeze, with a short choppy sea, is not unusual.

Strong land winds, known as "Belats," are experienced between the middle of December and the middle of March. During the night the 15 wind occasionally falls to a calm of about an hour's duration, which is followed by violent squalls from the mountains, at intervals of a few minutes, for 5 or 6 hours; these squalls give no warning, except the noise they make passing over the water, and are sufficiently strong to raise a heavy sea a little distance offshore; in some years they are 20 rare, while in others they are frequent and very violent. The "Belat" may be succeeded by strong south-easterly winds, causing a considerable sea.

Chart 3785.

Off-lying islands and dangers.—Anchorages.—The Kuria 25 Muria islands (page 408) are five in number, viz., Hāsikiya (Haski), Sūda (Soda) island, Hallāniya island (*Lat. 17° 32' N., Long. 56° 05' E.*), Qibliya island (Jezirat Kabliya), and Gharzant (Kirezwet) islet. See views facing page 412. They are British possessions, having been ceded by the Sultan of 'Omān, in 1854; except for Hallāniya and 30 Qibliya islands they are uninhabited.

Hāsikiya, the westernmost island of this group, lying about 17 miles east-north-eastward of Ras Hāsik, is rocky and has two small bays on its eastern side; its southern end rises in two conical peaks, close together, attaining an elevation of 500 feet (152^m4). This island is 35 composed of granite, and is white with guano; it is without a vestige of vegetation or any appearance of having ever been inhabited. See view facing page 412.

A rocky shoal, which dries, lies about half a mile from the north-western side of Hāsikiya; there are depths of 16 fathoms (29^m3) 40 between it and the island.

Sūda island, which was formerly inhabited, lies 13 miles eastward of Hāsikiya, and attains an elevation of 1,310 feet (399^m3) near the middle of the island, which thence slopes irregularly to the coasts; it is barren, with no trees except tamarisks, and only a small quantity of grass and 45 moss near the summit. Many small points project from the coasts of this island, with reefs extending from half a cable to 1½ cables off them, forming coves suitable for small craft with local knowledge; the eastern side of the island is fronted by sunken rocks.

A rock, with a depth of less than 6 feet (1^m8) over it, lies about one 50 mile westward of the western extremity of Sūda island.

On the southern side of Sūda island is a bay, with depths of 10 fathoms (18^m3) in the middle, decreasing toward the shore, which affords good anchorage to small vessels with local knowledge, sheltered

Charts 1012, 748b.

Chart 3785.

except from winds between south and west-south-west. A ledge of rocks extends about 3 cables south-westward of the eastern entrance point of this bay, and there is a sunken rock a short distance from its
5 western entrance point.

A vessel passing between Sūda island and Hallāniya island, 5 miles eastward, should keep close to the former island, which may be approached to within half a mile, to avoid the sunken rocks lying within a distance of $2\frac{1}{2}$ miles of the western end of Hallāniya island ;
10 the depths in the centre of this passage are irregular.

The general appearance of Hallāniya island is rugged, the middle part having granite peaks, the highest of which is 1,503 feet (458^m1) high ; the eastern and western ends of this island terminate in comparatively low points. The mountains end at Ras Hallāniya, the
15 northern extremity of the island, in a bold, projecting limestone bluff, 1,645 feet (501^m4) high, the summit of the island ; the coast is a rugged and nearly vertical cliff for about one mile on each side of this point. The island is extremely barren, the only trees being tamarisks ; there is a little grass on its eastern side. There are a few inhabitants.

20 The dangers off the western side of Hallāniya island were mentioned above ; one of these rocks, three-quarters of a mile from Ereki Frahunt, the western extremity of this island, dries.

Shoals and rocks, with a least depth of 6 feet (1^m8), lie within a distance of about half a mile from the southern coast of Hallāniya
25 island, and a reef, extending to as much as three-quarters of a mile offshore, fringes the south-eastern side of this island (*Lat.* $17^\circ 32' N.$, *Long.* $56^\circ 05' E.$).

Some rocks, with depths of less than 6 feet (1^m8) over them, lie about one mile north-westward of Ras Saiyir (Saiir), the eastern extremity
30 of Hallāniya island, on the southern side of Ghubbat ar Rahib.

A bank, with a depth of 3 fathoms (5^m5) over it, extends to as much as about one mile north-westward of the north-western side of Ras Hallāniya.

The best anchorage off Hallāniya island is in depths of from 8 to
35 12 fathoms (14^m6 to 21^m9), off its northern side, about $2\frac{1}{2}$ miles west-south-westward of Ras Hallāniya and a quarter of a mile off a sandy cove, but it is open to winds from east, through north, to west.

Ghubbat ar Rahib affords good anchorage to small vessels with local knowledge in depths of from 7 to 14 fathoms (12^m8 to 25^m6), sheltered
40 from winds from south-east, through south, to north-west. During the strength of the south-west monsoon, heavy south-westerly squalls come down the gully between the hills and a considerable sea sets into the bay, at which time, the western anchorage is preferable.

Qibliya island, the easternmost of the group, lying 13 miles eastward
45 of Ras Saiyir, is barren and rocky, except for a small sandy bay at its north-western point. There are several limestone peaks on this island, which show from all directions ; the highest of these attains an elevation of 550 feet (167^m6). *See view facing page 412.*

Well rock, lying about half a mile south-south-westward of the
50 south-western extremity of Qibliya island, is a small above-water rock, and is so called from its having a natural well filled with salt water.

Four Peaked rock (*see view facing page 412*), about 100 feet (30^m5) high, so named from its shape, lies about one mile north-north-westward of the north-western point of Qibliya island, the channel between

Chart 3785.

being rocky, with depths of from 2 to 3 fathoms (3^m7 to 5^m5) in it ; a rocky ledge, on which there are four above-water rocks, extends half a mile north-westward of Four Peaked rock.

Tilly rock, with depths of 3 fathoms (5^m5) over it, lies about $1\frac{1}{2}$ miles eastward of Qibliya island, and about 2 miles farther eastward is a rock, which dries, over which the sea usually breaks ; Four Peaked rock, bearing less than 280° and well open northward of Qibliya island, leads northward of these two rocks. Care must be taken to give these rocks a wide berth, as they are steep-to and the depths in their vicinity are irregular.

Small vessels with local knowledge can obtain anchorage, with indifferent holding ground, requiring a long scope of cable, on the northern side of Qibliya island, the bottom being loose and decayed coral.

There is similar anchorage for small vessels with local knowledge in depths of about 12 fathoms (21^m9), off the southern side of Qibliya island, with Well rock bearing about 248° and the western extremity of the island 293° .

Gharzant islet, about 6 miles east-north-eastward of Ras Hallāniya, is rocky and has a double peak ; the base of this islet consists of four red granite rocks grouped closely together.

A sunken rock lies about $1\frac{1}{2}$ cables west-north-westward, and another about three-quarters of a cable north-westward of Gharzant islet (*Lat.* $17^\circ 37' N.$, *Long.* $56^\circ 12' E.$) ; there are depths of from 8 to 16 fathoms (14^m6 to 29^m3) between this islet and the outer rock. Two rocks, above water, are situated close off the eastern extremity of the islet.

Tidal streams.—During the rising tide the tidal stream is east-going southward of the Kuria Muria islands and west-going northward of them.

Charts 3784, 3785.

Coast.—Dangers.—The coast between Ras Marbāt and the south-eastern entrance point of Bandar Qinqari has several rocky points with isolated rocks close to them ; small sandy bays lie between these points.

A rock, with a depth of less than 6 feet (1^m8) over it, lies close offshore, at the head of Bandar Qinqari ; the village of Sidh is situated at the head of this bay.

Some rocks, the positions of which can best be seen on the charts, lie close offshore between Bandar Qinqari and Jabal Musaira ; Jabal Musaira is fringed with a reef.

The coast from Jabal Musaira to Ras Nūs is steep-to except for some sunken rocks, lying within three-quarters of a mile of the coast, within a distance of 3 miles south-westward of Ras Nūs.

Ras Nūs is low, rocky, and prominent, and can easily be identified by Jabal Nūs ; immediately south-westward of this cape and close offshore is a large mass of rock shaped like a tub.

Chart 3785.

The shores of Kuria Muria bay are a succession of limestone cliffs and sandy beaches. There are no villages of any importance, most of the few inhabitants living in caves.

The coast between Ras Nūs and Ras Hāsik is steep-to.

Bandar Nūs, between Ras Nūs and Ras as Samhān (Samhār),

Charts 1012, 748b.

Chart 3785.

2½ miles northward, is a small bay, with a village on its shore ; Ras as Samhān is low, rocky, and fringed by a reef.

- The ruins of the tomb of Nabī Sālih bin Hūd (Nebi Salch-bin-Hud),
 5 a saint who lived about the time of Abraham, lie in a small valley about 2 miles northward of Ras as Samhān and one mile inland.

There is a small wooded valley in the vicinity of Ras Hallan, a point about 4½ miles north-north-eastward of Ras as Samhān.

Ras Hāsik, a small projection, is low and rocky.

- 10 Bandar Hāsik is a small bay on the northern side of Ras Hāsik ; Hāsik village lies in a valley a short distance from the head of this bay. A marsh, separated from the sea by a ridge of sand, which was formerly an inlet, is situated in this valley ; a few stunted trees are scattered over its surface, while the valley, higher up, is densely wooded.

- 15 The coast between Ras Hāsik and Ras Tihrar, a low sandy point about 4 miles north-north-westward, is irregular ; there is a sandy spot just northward of Ras Attabarran, about 8 miles north-north-westward of Ras Tihrar.

- Wadi ar Raikhūt, which is fronted by a sandy cove, Khōr ar Raikhūt
 20 (Khor Reikut), about 2 miles north-north-westward of Ras Hāsik (*Lat.* 17° 24' N., *Long.* 55° 20' E.), is reported to extend to the confines of Hadhramaut, with Jabal Habrūt and the Jabal as Samhān range on its southern side ; it appears to be densely wooded. The breadth of the water course, and the huge masses of rock that have been swept
 25 down it, denote strong torrents after heavy rainfall. A brackish lake lies at the entrance to this valley.

Ras Muntajib is a bluff headland, with a rugged peak about 1½ miles northward of it ; this peak is difficult to identify.

- From a point about 8 miles north-north-eastward of Ras Muntajib
 30 the coast and plain fronting the mountains as far east as the dark point of Shauwāmiya are low and sandy, with some bushes ; there is a sand-hill at the western end of this plain and a clump of trees at its eastern end.

- Three spits, with a least depth of 2 fathoms (3^m7), the positions of
 35 which can best be seen on the chart, extend to as far as one mile offshore on this part of the coast.

A white stone building is situated about 4 miles west-north-westward of the dark point of Shauwāmiya.

- The coast between the dark point of Shauwāmiya and Ras Minji is
 40 steep-to ; there are overfalls between this latter point and Ras ash Shauwāmiya.

- Ras Minji is a slightly projecting bluff, nearly 700 feet (213^m4) high. Between Ras Minji and a point about 1½ miles westward of Ras ash
 Sharbatāt the coast is fronted by a bank, with a least depth of 2 fathoms
 45 (3^m7) over it, which extends to a distance of as far as 1½ miles offshore.

Ras Qarwāo (Qarwas), about 3 miles west-north-westward of Ras ash Sharbatāt, is a bluff table-topped headland, with precipitous sides ; it is composed of a species of sandstone, over a horizontal stratum of chalk.

- 50 Close westward of Ras Qarwāo is a tongue of sand running down the cliffs which here are fronted by a strip of low land with off-lying rocks ; at the western end of this low land is a small, bright red, salt water lake.

Ras ash Sharbatāt is a precipitous bluff with an even table surface and a deep notch in its face.

Charts 1012, 748b.



Hāsikiya, bearing 247° , distant 3 miles.



Qibliya island from the rock $3\frac{1}{2}$ miles eastward of it.
Four Peaked rock.

Two views of the Kuria Muria islands.

(Originals dated 1906.)



*Ras as Sauqara,
bearing 340°, distant 17 miles.*

Ras as Sauqara.
(Original dated 1906.)



*Ras Khushayim,
bearing 033°, distant 13 miles.*

Ras Khushayim.
(Original dated 1904.)

Ras al Madraka.



*Ras al Madraka. Ras Marhar, bearing 343°
Islet.*

Ras al Madraka from south-south-eastward.
(Original dated 1906.)

Charts 3784, 3785.

Currents.—Between Ras Fartak and Ras Nūs the current often sets against the wind during the north-east monsoon. Amongst the Kuria Muria islands it varies very much, and frequently sets north-westward. 5

Winds and weather.—The winds and weather in Kuria Muria bay appear to be more boisterous and variable than elsewhere on this coast; the northerly wind, known as the “Belat,” is strong, and changes of wind may be sudden, giving little or no warning. In the vicinity of the bay and islands the south-west monsoon is said by the 10 natives to set in with heavy squalls, rain, and thunderstorms.

Anchorage.—Bandar Qinqari (*Lat. 17° 00' N., Long. 55° 02' E.*) affords anchorage to small vessels with local knowledge in depths of from 8 to 16 fathoms (14^m6 to 29^m3), rock and sand, with shelter from north-easterly and easterly winds; it is open southward and 15 south-westward.

Chart 3785.

Small vessels with local knowledge can obtain anchorage in Bandar Nūs, with shelter from southerly and westerly winds, in depths of 9 fathoms (16^m5), about 2½ cables offshore. 20

There is shelter during northerly winds for small vessels with local knowledge, close southward of Ras Hāsik. 20

Bandar Hāsik affords anchorage to small vessels with local knowledge close offshore, in depths of from 5 to 12 fathoms (9^m1 to 21^m9), with shelter from southerly winds. 25

Anchorage was obtained by H.M.S. *Deptford*, in 1936, in depths of 11 fathoms (20^m1), about 5½ cables offshore, with the dark point of Shauwāmiya, bearing 082°, distant 3 miles; the depths inshore of this position decrease rapidly. 25

Native craft, desiring shelter from northerly winds, often anchor 30 off the low sandy coast westward of Ras Qarwāo, which is known locally as Bandar ash Sharbatāt; there is good anchorage here for small vessels with local knowledge in depths of from 5 to 10 fathoms (9^m1 to 18^m3), sand.

In 1934, H.M.S. *Bideford* obtained anchorage here in depths of 35 7 fathoms (12^m8), sand and weed, about 6 miles eastward of Ras Minji and one mile offshore.

Charts 10c, 3785.

RAS ASH SHARBATĀT TO RAS AL MADRAKA.—Coast.

—**Aspect.**—**Dangers.**—From Ras ash Sharbatāt the coast, which is 40 steep-to, trends 18 miles north-eastward to Ras as Sauqara and consists of precipitous limestone cliffs, about 600 feet (182^m9) high, with a level tableland at their summit; with the sun shining on it the coast appears like clay cliffs.

Chart 10c.

Ras as Sauqara (*see view facing this page*) is a prominent headland which, from north-eastward, has the appearance of a perfect bluff. Funnel or Tower hill, 24 miles north-north-westward of Ras as Sauqara, from a distance, seems detached, but on a closer approach is seen to be the summit of the high tableland which trends towards it from Ras as 50 Sauqara; H.M.S. *Bideford* reported, in 1934, that Funnel hill appears a light brown sugarloaf hill against a lighter background and is inconspicuous.

Charts 3785, 1012, 748b.

Chart 10c.

From Funnel hill the tableland turns gradually eastward, approaching the coast to within 4 miles about 35 miles westward of Ras al Madraka, which is situated about 88 miles north-eastward of Ras as Sauqara. See view facing page 413.

From Ras as Sauqara the coast, which is low and sandy, with a few mangrove bushes, trends about 40 miles north-north-eastward and thence 56 miles east-north-eastward to Ras Khushayim (Takiyat Abak), a point 4 miles south-westward of Ras al Madraka (*Lat.* 19° 00' N., *Long.* 57° 51' E.), forming Sauqara (Sukra) bay. During the north-east monsoon there is always a heavy swell in this bay and a surf on the coast. Sauqara and Lakba villages are situated about one and 5 miles, respectively, northward of Ras as Sauqara; this part of the coast is sparsely populated.

15 A bank, with depths of less than 5 fathoms (9^m1) over it, between a point 7 miles north-north-eastward of Ras as Sauqara and another 15½ miles westward of Ras Khushayim, extends to as much as 7½ miles offshore; there is usually a strong ripple over the western part of this bank, whence it derives its name of Riqq al Jāzir (Rig-al-Jāzir).

20 A rocky bank, which nearly dries, fringes the coast from 18 to 32 miles north-north-eastward of Ras as Sauqara.

Ras Khushayim is a bluff point at the southern end of a range of flat-topped hills, which extends 11 miles westward of Ras al Madraka. See view facing page 413.

25 Bandar Jazirat, on the western side of Ras Khushayim, is a small sandy bay.

Chart 3785, plan of Madraka anchorage.

Ras al Madraka (see view facing page 413), which is steep-to, is dark, with a rocky islet close north-eastward of it; the land in the vicinity of this cape consists of black volcanic peaks, with flat-topped hills, about 450 feet (137^m2) high, in the background.

From seaward, Ras al Madraka appears like an island, hence it is sometimes called Ras al Jazirat. From a distance the land about it appears to be small detached hummocks, but from near it they are seen to be connected with Look-out hill, a remarkable circular hummock, which is the summit of the cape, situated about 2 cables westward of its extremity.

Charts 10c, 3785.

40 **Caution.**—The coast from Ras Minji (page 408) to Ras al Jibsh, about 290 miles north-eastward, is mainly inhabited by the Jeneba tribe, who bear a generally bad character.

Chart 10c.

Anchorage.—In 1934, H.M.S. *Bideford* anchored in Sauqara bay, in depths of 4 fathoms (7^m3), with Funnel hill, bearing 338°, distant 19½ miles; she also obtained anchorage in depths of 2½ fathoms (4^m6), with the same hill, bearing 285°, distant 12½ miles.

H.M.S. *Deftford*, in 1936, obtained anchorage in this bay, in depths of 2½ fathoms (4^m6), with Funnel hill bearing 256° and Ras as Sauqara about 198°.

50 In 1934, H.M.S. *Bideford* anchored in Sauqara bay, in depths of 4½ fathoms (7^m8), sand, about 15 miles westward of Ras Khushayim and about 3½ cables offshore.

Small vessels with local knowledge can obtain anchorage anywhere in Bandar Jazirat, the bottom being sand and mud, but should the

Charts 3785, 1012, 748b.

Chart 10c.

wind shift south-westward and blow hard, which occurs frequently during the north-east monsoon, it is necessary to shift to an anchorage on the northern side of Ras al Madraka.

Chart 3785, plan of Madraka anchorage.

There is good anchorage, in depths of about $5\frac{1}{2}$ fathoms (9^m6), during the south-west monsoon, northward of Ras al Madraka (*Lat.* $19^{\circ} 00' N.$, *Long.* $57^{\circ} 51' E.$), with the north-eastern extremity of the rocky islet bearing 181° , distant about 7 cables, or, in depths of from $5\frac{1}{2}$ to 6 fathoms (10^m1 to 11^m0), for about 5 cables 169° from the berth indicated; the bottom is coral. Small vessels with local knowledge can anchor closer in, but a long swell sets in here.

Chart 10c.

GULF OF MASĪRA.—The Gulf of Masira is entered between Ras al Madraka and Ras Abu ar Rasās, the southern extremity of Masira, an island 83 miles north-north-eastward; the shores of the gulf are desolate and sparsely populated by the Jeneba tribe (page 414).

Caution.—A near approach to the Gulf of Masira should be avoided by a vessel passing along the coast owing to the many dangers in it, also on account of the indraught which at times exists near and within these dangers, especially during the rising tide. During strong winds there is always a heavy swell in this gulf and the sea breaks heavily over many parts of the numerous banks.

Current.—**Tidal streams.**—The current, from April to September, usually sets northward along and parallel with the coast from Ras al Madraka to Ras al Hadd, about 240 miles north-north-eastward, at rates of from 10 to 45 miles a day.

The tidal streams in the Gulf of Masira set between north-north-west and north-west at a rate of $1\frac{1}{2}$ knots during the rising tide and in the opposite direction at the same rate during the falling tide; where the depths are over 100 fathoms (182^m9) the tidal streams set parallel with the coast but are probably lost in the prevailing current.

Islet and dangers.—Shi'b Kudūn, or San Carlos banks, the south-western extremity of which is situated $19\frac{1}{2}$ miles northward of Ras al Madraka and 5 miles offshore, extends $21\frac{1}{2}$ miles north-eastward, and has, in places, depths of less than 6 feet (1^m8) over it; a considerable swell sets over this danger and in bad weather the sea probably breaks over the shoal parts.

Jezirat Hamar an Nufūr, lying 47 miles northward of Ras al Madraka and 3 miles offshore, has vertical limestone cliffs; its summit is flat and split in all directions. Myriads of seabirds frequent this islet. Some sunken rocks lie close offshore, both on its eastern and western sides. The channel between this islet and the coast has a least depth of 3 fathoms (5^m5) in the fairway, and is free from dangers.

Shi'b Abu Saifa, the southern extremity of which is situated $22\frac{1}{2}$ miles eastward of Jezirat Hamar an Nufūr, extends $10\frac{1}{2}$ miles northward and 12 miles north-eastward; rocks, with depths of less than 6 feet (1^m8) over them, lie near the edges of this reef.

A reef, with depths of less than 6 feet (1^m8) over it, lies with its south-western extremity 20 miles north-eastward of Jezirat Hamar an Nufūr and extends 3 miles north-eastward; another reef, with depths of less than 6 feet (1^m8), lies with its southern extremity 16 miles north-north-eastward of the same islet and extends 4 miles north-

Chart 10c.

north-eastward; a shoal, with a depth of $5\frac{1}{2}$ fathoms (10^m1), lies 3 miles northward of the latter reef.

Shi'b al Ghubāb, over which the sea breaks, lies 25 miles north-north-eastward of Jezirat Hamar an Nufūr (*Lat.* $19^\circ 48' N.$, *Long.* $57^\circ 48' E.$) and $6\frac{1}{2}$ miles offshore; it is rocky, with depths of less than 6 feet (1^m8) over it. A shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6), lies $3\frac{1}{2}$ miles westward of Shi'b al Ghubāb.

Kināsat Hikmān, a reef extending to as far as one mile from the southern side of Barr al Hikmān, a peninsula, the southern coast of which forms the northern shore of the gulf, dries; a bank, with a least depth of one fathom (1^m8) over it, extends about $1\frac{1}{2}$ miles farther seaward, and several shoals, some of which dry, lie within a distance of about 8 miles southward of Ras Zaiwari (Zeiwari), the south-western extremity of Barr al Hikmān.

There are occasional overfalls between Shi'b Abu Saifa and Kināsat Hikmān.

The dangers off the southern end of the island of Masīra are described on page 419.

20 Western side.—Coast.—Aspect.—From Ras al Madraka the coast trends about 10 miles north-north-westward to Ras Markaz, a projecting bluff (*see* view facing page 413); it is sandy, with hills immediately within it, until within $3\frac{1}{2}$ miles of the latter point when it becomes precipitous.

25 Between Ras Markaz and Ras Khaisat-al-Liyókh, 3 miles north-westward, the coast recedes forming a small bay, with a sandy beach, having lofty cliffs a short distance within it; this part of the coast is fringed by a sandbank, which dries.

Ras Khaisat-al-Liyókh is a bluff which it is difficult to identify until close to it.

From Ras Khaisat-al-Liyókh the coast, which is steep-to, trends in an unbroken line of vertical cliffs 14 miles northward to Ras al 'Āni (Aani), a bluff projection.

35 From Ras al 'Āni the coast, consisting of steep cliffs, trends $4\frac{1}{2}$ miles north-north-westward to Ras Mattáh, a small bluff projection, and thence 9 miles northward to Ras Quwairat (Kuweirát), or Ras Duq-qam; for about 5 miles northward of Ras Mattáh the cliffs are fringed by a sandy beach.

40 Ras adh Dhila' (al Dthila), a small rocky projection $4\frac{1}{2}$ miles southward of Ras Markaz, is the beginning of a uniform line of tableland extending northward to Ras Quwairat, which descends to the coast in vertical cliffs, from 230 to 480 feet (70^m1 to 146^m3) high.

A low peninsula, with a small mound on its northern end, extends a short distance northward of Ras Quwairat; the cape is easily identified by this feature.

Ghubbat Quwairat (Ghubbet Kuweirát), between Ras Quwairat and Surair (Sireir), $9\frac{1}{2}$ miles northward, is a shallow bay, free from dangers; the coast here is a sandy plain, thinly covered with mangroves.

Surair is a low rocky point, with two rocks, above water, close off it.

50 Between Surair and Ras Sidāra, about 4 miles north-north-eastward, the coast is alternatively sandy and cliffy. The latter point is low and inconspicuous; on it is situated a village, with a date grove, and immediately inland are several groups of conical hills.

From Ras Sidāra the coast trends about 5 miles north-north-east-

Charts 3785, 1012, 748b.

Chart 10c.

ward to a steep bluff, Ras Naqrair (Nakhreir) ; the first 2 miles of this coastline is sandy, the remainder cliffy.

From Ras Naqrair (*Lat. 19° 58' N., Long. 57° 48' E.*) the coast, consisting of a sandy beach, with a range of hills, from 700 to 800 feet (213^m4 to 243^m8) high, rising steeply within it, trends about 12 miles northward to Ras as Sarāb. 5

Ras Eikeit, about 4 miles northward of Ras Naqrair, is low and sandy ; Ras as Sarāb, near which is a village, is low, sandy, and inconspicuous. 10

From Ras as Sarāb the coast, which is low and sandy, trends 13 miles north-eastward to Ras Bintót, forming Ghubbat as Sarāb.

Ras Bintót is low, broad, and sandy ; a rock, with a depth of less than 6 feet (1^m8) over it, lies about 3 cables east-north-eastward of this point. 15

Jabal ash Sha'batdin, about 9 miles westward of Ras Bintót, is a conspicuous peaked hill.

Ghubbat Bintót is entered between Ras Bintót and Ras Abana, 8½ miles north-eastward, and is free from dangers ; the shores of this bight are sandy. 20

A low range of hills trends west-south-westward from Ras Abana.

Anchorage.—The bay between Ras Markaz and Ras Khaisat-al-Liyókh affords safe anchorage to vessels with local knowledge in depths of from 6 to 7 fathoms (11^m0 to 12^m8), sand, with good shelter from southerly and south-westerly winds. 25

Small craft with local knowledge can obtain anchorage, sheltered from south-westerly winds, close north-westward of Ras Quwairat.

Northern side.—Dangers.—Barr al Hikmān (page 416) is very low, sandy, and covered with bushes.

From Ras ash Shajarāt (Shijarét), 7½ miles east-south-eastward of Ras Abana, the coast, which is low, sandy, and desolate, trends 6 miles south-eastward to Ras Zaiwari and thence about 10 miles eastward to Ras al Mishāyu (Mishsiyu) ; Ras al Hassi, about midway between Ras ash Shajarāt and Ras Zaiwari, is low, round, and sandy. Ras Zaiwari is low and sandy, and immediately inshore and eastward of it is Khor al Milh, a lagoon separated from the sea by a narrow ridge of sand ; it was reported, in 1934, that this lagoon was non-existent. Ras al Mishāyu is also low and sandy. 30 35

The dangers extending from this coast are described on page 416.

Head of gulf.—Islets and dangers.—Ghubbat al Hasnī (Ghubbet Hashish), the head of the Gulf of Masīra, is entered between Ras Abana and Ras ash Shajarāt. 40

Its shores are low, sandy, and desolate ; a little distance inland on its western side is a low range of hills, and a pyramidal hill, 120 feet (36^m6) high, stands close to the coast, 1½ miles northward of Ras Abana. 45

On the north-eastern side of this bay, 6½ miles north-north-eastward of Ras ash Shajarāt, is the entrance to a creek, which is reported locally to be connected with Masīra channel, on the western side of the island of Masīra, but this is doubtful.

Ras ash Shajarāt is low and sandy, with a rock, above water, close off it. 50

The head of Ghubbat al Hasnī dries out to a distance of 2½ miles, and thence a rocky spit, dividing the bay into two parts, extends 3 miles southward ; a reef fringes the eastern side of this bay.

Charts 3785, 1012, 748b.

Chart 10c.

Shi'b Iziyat, lying $1\frac{1}{2}$ miles east-south-eastward of Ras Abana (Lat. $20^{\circ} 26' N.$, Long. $58^{\circ} 04' E.$), has a depth of less than 6 feet (1^m8) over it; a shoal, with a depth of 3 fathoms (5^m5), lies $1\frac{1}{2}$ miles south-westward of Shi'b Iziyat.

A rock, with a depth of less than 6 feet (1^m8) over it, lies close east-north-eastward of Ras Abana.

Ibb (Ab), an islet at the southern end of the rocky spit mentioned above, is low and rocky; a rock, above water, lies close off its south-western side, and a rock, with a depth of less than 6 feet (1^m8) over it, $2\frac{1}{2}$ miles north-westward of its western extremity. Mahāt, an islet $3\frac{1}{2}$ miles north-north-eastward of Ibb, is low, sandy, and thickly covered with shrubs and mangroves; a village, consisting of huts is situated on this islet, and a creek, with a depth of 2 feet (0^m6) in it at high water, connects it with the shore. Raqq (Rig), a steep rocky islet, about $1\frac{1}{2}$ miles west-north-westward of Mahāt, is not easily distinguished from the coast behind it.

Tidal streams.—During the rising tide the tidal stream sets north-north-westward into Ghubbat al Hasnī, and during the falling tide in the opposite direction, with rates of about three-quarters of a knot.

Anchorage.—H.M.S. *Lapwing*, in August, 1907, anchored in a depth of 7 fathoms (12^m8), with the islets of Raqq and Ibb bearing 007° and 097° , respectively.

In November, 1934, H.M.S. *Lupin* approached with the eastern extremity of Ras Abana bearing 336° . When Raqq bore 005° , the anchorage was approached on that bearing and the vessel anchored, in a depth of $4\frac{1}{2}$ fathoms (8^m7), with Ibb bearing 137° ; from this position the rocks south-westward of Mahāt were about 5 cables distant and clearly visible.

Landing anywhere is difficult, except at high water.

Fresh provisions have sometimes been procured at the village on Mahāt.

MASĪRA.—Aspect.—The island of Masīra, lying from 8 to 12 miles from the mainland at the north-eastern end of the Gulf of Masīra, is barren and sterile; the population, in 1939, did not exceed 1,000.

It is mostly hilly, especially on its eastern side, where a range of hills of volcanic formation, separated from the coast by a narrow sandy plain, runs nearly the entire length of the island; in about the middle of the range on the north-eastern side of the island is a conspicuous steep plateau. On the western side of this island from Ras Abu ar Rasās, its southern extremity, to Dauwa (Daua), about 7 miles from its northern extremity, there are a few outcrops of low hills which are separated from the eastern range by an extensive sandy plain on which there are several hillocks. Between Dauwa and Jabal Hilf, 5 miles north-north-eastward, there is a flat sandy plain extending to the north-eastern hills; Jabal Hilf, about 240 feet (73^m1) high, is conspicuous and has a blackish colour.

Jabal al Mathrūb (Lat. $20^{\circ} 34' N.$, Long. $58^{\circ} 53' E.$), a rounded hill, 4 miles east-south-eastward of Dauwa, is the most conspicuous hill when approaching Masīra from northward or north-eastward; it is reported to be 730 feet (222^m5) high.

Climate.—The climate of Masīra, between the months of November and March, appears to be most agreeable and healthy, pleasantly hot

Charts 3785, 1012, 748b.

Chart 10c.

during the day and cool at night, when there is frequently a very heavy dew. During the south-west monsoon it is similar to other places in Arabia, hot, damp, and generally unhealthy.

Eastern coast.—Aspect.—Dangers.—Beacon.—Light.—Ras 5
Abu ar Rasās is low and rocky; Jabal Sawir, a conspicuous conical hill, attains an elevation of 462 feet (140^m8) about 2 miles north-north-eastward of this cape.

From Ras Abu ar Rasās the coast, which is fringed by a reef, trends 6 miles east-north-eastward to Ras Dharri (Dtharri), a small rocky 10 projection, and thence about 5 miles north-eastward to Ras Qaida (Keidá), a small rocky projection with a conspicuous conical hill, about 100 feet (30^m5) high, close to it, which from eastward shows two peaks. There are several rocky points, fringed with rocks, on this stretch of coast, and small sandy bays lie between them. 15

Landing on this part of the coast is difficult, except in a flat calm or at high water, and even then care is required as there is usually a slight swell.

Numerous shoals, with a least depth of 13 feet (4^m0) over them, lie within a radius of 4 miles of Ras Abu ar Rasās. 20

Shi'b Matrah (Matreih), with depths of less than 6 feet (1^m8) over it, lies about 1½ miles west-south-westward of Ras Abu ar Rasās; Shi'b Abu ar Rasās, over which the sea breaks, lies about half a mile south-westward of the same point, and dries 3 feet (0^m9).

A coral shoal, with a least depth of 3 fathoms (5^m5) over it, lies about 25 1½ miles eastward of Ras Qaida. When the sea is smooth there is no indication of shoal water, but with the slightest swell the sea breaks heavily on this shoal. Vessels should not, therefore, anchor on this or any other shoal around the island.

From Ras Qaida the coast trends about 10 miles north-north-east- 30 ward to Ras Razim and thence 7 miles north-eastward to Ras Zafarnāt; it has a low rocky beach, and there are no off-lying dangers.

Hakkān, a village about 5 miles northward of Ras Qaida, is situated in a date grove close to the coast.

Ras Zafarnāt is rocky, with hills rising abruptly from it; Round 35 hill, 2½ miles westward of this point, is easily identified from eastward.

Ras Yei, the eastern extremity of the island, about 2 miles north-eastward of Ras Zafarnāt, is a bluff rising to a ridge of hills extending westward to the middle of the island. A conspicuous peak, 325 feet (99^m1) high, is situated about 2 miles west-north-westward of Ras Yei, 40 and about 2½ miles farther west-north-westward is Jabal al Mathrüb (page 418) with an obtuse summit.

A rocky bank, with depths of less than 6 feet (1^m8) over it, extends about half a mile from the coast between Ras Yei and Ras al Jezīra, 3½ miles north-north-westward; Ras al Jazīra (*Lat.* 20° 35' N., *Long.* 45 58° 56' E.) is rocky and has a conspicuous black patch on it. Sharp peak, 1½ miles westward of the latter point, is 380 feet (115^m8) high.

Jezīrat Janzi, a sandy islet, lies close northward of Ras al Jezīra.

Between Ras al Jezīra and Ras al Jidūfa, 7 miles northward, the coast forms a bay, and is fringed by a bank, with depths of less than 50 3 fathoms (5^m5) over it, extending to as much as about half a mile offshore.

A rock awash lies on the south-western side of a shallow bank, about 1½ miles north-north-westward of Jezīrat Janzi and three-quarters of

Charts 3785, 1012, 748b.

Chart 10c.

a mile offshore ; the sea breaks over this rock and bank with a moderate swell.

Charts 3786, 10c.

- 5 Ras al Jidūfa, the north-eastern extremity of Masīra, is rocky, and consists of two small projections, half a mile apart, with a slight indentation between them, the shore of which rises to Jabal al Jidūfa, about 250 feet (76^m2) high ; a cairn stands on the north-western part of this headland. A reef, extending to a distance of half a mile offshore, fringes this headland, and there are depths of less than 3 fathoms (5^m5) within about three-quarters of a mile of this reef.

Chart 3786.

- A white pyramidal beacon, 15 feet (4^m6) in height, stands on Jabal al Jidūfa ; this beacon, from which a light is occasionally exhibited, is known locally as Brady's beacon.

- Northern coast.—Dangers.—Beacons.—Light.**—From Ras al Jidūfa the coast trends about 4 cables north-north-westward and thence 2½ miles westward to Ras Hilf ; reefs, with depths of less than 6 feet (1^m8) over them, extend in places as much as 1½ cables off-shore ; a bank, with depths of less than 3 fathoms (5^m5), extends as much as 7½ cables offshore from the western part of this stretch of coast.

- A beacon, 12 feet (3^m7) in height, painted black, stands on the coast, one mile east-north-eastward of Ras Hilf, and a beacon, consisting of a concrete building surmounted by a white pyramid, 15 feet (4^m6) in height, from which a light is occasionally exhibited, is situated on Ras Hilf.

Ras Hilf is low and sandy ; a bank, which dries one foot (0^m3), extends one cable westward of this point.

- 30 **Off-lying dangers.**—Island reef, lying one mile north-eastward of Ras Hilf and about 3 cables offshore, is awash at high water ; the sea breaks over this reef when there is a moderate swell. It was reported, in 1938, that this reef was extending farther seaward.

Charts 3786, 10c.

- 35 Some shoals, with a least depth of 2½ fathoms (4^m1), lie within a distance of about 5 miles northward of Ras Hilf ; the depths between these shoals and the coastal reef are irregular.

- Anchorage.—Directions.—Buoys.**—Anchorage has been obtained in depths of 5 fathoms (9^m1) about 1½ miles northward of Ras Hilf 40 (Lat. 20° 42' N., Long. 58° 52' E.). A vessel bound for this anchorage should endeavour to make a landfall in the morning, and steer towards Ras al Jidūfa, with that point bearing about 200°, until within about 2 miles of it, when a west-south-westerly course may be steered towards the anchorage. The holding ground is said to be poor.

- 45 The channel leading to this anchorage is marked on its southern side by two black barrel buoys.

Western coast.—The western coast of Masīra is described with Masīra channel on pages 421-423.

- MASĪRA CHANNEL.**—Masīra channel, between the mainland 50 and the western side of the island of Masīra, is shallow, and should only be used by small vessels with local knowledge ; it is encumbered with islets and dangers, leaving only narrow passages.

Tidal streams.—The tidal streams set northward with the rising

Charts 10c, 3785, 1012, 748b.

Charts 3786, 10c.

tide and southward with the falling tide, attaining rates of half a knot at neaps and $1\frac{1}{2}$ knots at springs.

Chart 10c.

South-western part of channel.—Islets and dangers.—From Ras Abu ar Rasās the western coast of Masīra trends 11 miles northward to Ras al Kalbān; it is low and sandy, with several rocky points and small sandy bays; the shores of most of these bays are fringed with rocks but, with care, landing can be effected at most states of the tide. 5

The dangers southward and south-westward of Ras Abu ar Rasās are described on page 419. 10

Two above-water rocks, about $1\frac{1}{2}$ miles northward of Ras Abu ar Rasās, lie close offshore on the coastal reef, which here extends to as far as half a mile offshore; Banat Murshid, lying about 3 miles northward of the same point, consists of two above-water rocks, with some sunken rocks, over which the sea breaks except in flat calm, close south-westward and westward of them. 15

Shi'b Sanfar, a reef which dries one foot (0^m3) and over which the sea usually breaks, lies about $3\frac{1}{2}$ miles north-westward of Ras Abu ar Rasās; about one mile south-westward of Shi'b Sanfar is a detached shoal, with a depth of $2\frac{1}{4}$ fathoms (4^m1) over it, and a shoal, with a depth of $2\frac{1}{2}$ fathoms (5^m0), lies about 2 miles north-north-westward of this reef. 20

Shoals, with depths of $2\frac{1}{2}$ and $2\frac{1}{4}$ fathoms (4^m6 and 4^m1) over them, lie about three-quarters of a mile southward and one mile northward, respectively, of Banat Murshid. 25

About half a mile east-north-eastward of Shi'b Sanfar is an area about half a mile square, in which lie several shoals, with a least depth of $1\frac{1}{4}$ fathoms (2^m3); between this area and Banat Murshid is a channel with a least depth of 6 fathoms (11^m0) in it. 30

About 4 miles south-south-westward of Ras al Kalbān (*Lat.* $20^\circ 21' N.$, *Long.* $58^\circ 38' E.$) is a shoal, with a least depth of $2\frac{1}{4}$ fathoms (4^m1) over it; westward of this shoal the channel is encumbered with shoals, which have a least depth of 5 feet (1^m5). 35

A shoal, with a depth of $3\frac{1}{2}$ fathoms (6^m9) over it, lies about $2\frac{1}{2}$ miles south-south-westward of Ras al Kalbān, and two shoals lie in mid-channel about $1\frac{1}{2}$ miles south-westward of the same point, the northern having a depth of $2\frac{1}{4}$ fathoms (4^m1) and the southern a depth of $1\frac{1}{4}$ fathoms (3^m2). 40

Zanatiyat, a group of three rocks which dry, lie about $2\frac{1}{2}$ miles south-westward of Ras al Kalbān; a rock, with a depth of less than 6 feet (1^m8), lies about one mile southward of the southernmost of these rocks. H.M.S. *Bideford* reported, in 1934, that the depths in the vicinity of Zanatiyat appear to have decreased about 3 feet (0^m9). 45

Al Kalbān, a village $2\frac{1}{2}$ miles southward of Ras al Kalbān, consists of a few scattered huts.

From Ras al Kalbān the coast trends $6\frac{1}{2}$ miles north-eastward to the south-western entrance point of Umm ar Rasās bight, and has much the same characteristics as that portion of the coast southward of Ras al Kalbān; it is fringed by a reef, on which lie numerous rocks, with depths of less than 6 feet (1^m8) over them, and which extends to as far as three-quarters of a mile offshore. 50

Jabal Khairān (Jebel Kairān), $3\frac{1}{2}$ miles north-eastward of Ras al

Charts 3785, 1012, 748b.

p*

Chart 10c.

Kalbān, is a double-peaked hill, 331 feet (100^m9) high, which is not easily identified from southward.

Several islets and numerous rocks, which dry, lie within a distance of from one mile west-north-westward to 3 miles northward of Ras al Kalbān; there are occasional overfalls in this vicinity. Jezīrat Amkads, the southernmost of these islets and one mile west-north-westward of Ras al Kalbān, has the appearance, from south-westward, of a patch of sand; a cairn, about 8 feet (2^m4) in height, which can be seen from a distance of about 9 miles, stands in the centre of Jezīrat Amkads.

A shoal, with a depth of 2½ fathoms (5^m0) over it, lies about half a mile west-south-westward of Jezīrat Amkads, and a shoal, with a depth of 1½ fathoms (2^m3), which does not show up well until close to, about 1½ miles north-eastward of Jezīrat Sanfar, the northernmost of the islets mentioned above and lying about 3½ miles northward of Ras al Kalbān. H.M.S. *Bideford* reported, in 1934, that the depths northward of this latter shoal appear to have decreased about 6 feet (1^m8).

From Ras al Mishāyu, the south-western entrance point of Masīra channel, the coast trends about 30 miles north-eastward to Ras an Nuqda (Shanna); for the first 14 miles it is low and rocky, with some sandy patches; the remainder of this part of the coast is low and sandy, with scattered bushes.

North-eastern part of channel.—Islets and dangers.—From the south-western entrance point of Umm ar Rasās bight the coast trends 2½ miles east-south-eastward and thence 6 miles northward to Ras Shaghaf, forming Umm ar Rasās bight.

A bank, which dries, extends about 3½ miles north-north-eastward of the southern shore of Umm ar Rasās bight, and on this bank lies Jezīrat Shagha (*Lat.* 20° 28' N., *Long.* 58° 45' E.), a low sandy island, covered with scrub and low bushes; between this bank and the eastern shore of the bight is an inlet, used by small craft with local knowledge to approach the village of Umm ar Rasās. In 1938, a shoal, with depths of less than 3 feet (0^m9) over it, was reported to extend about 3 cables west-north-westward from the coast at Umm ar Rasās village.

A detached rock, with a depth of 2 feet (0^m6) over it, lies about 3 miles west-north-westward of the south-western entrance point of Umm ar Rasās bight.

Umm ar Rasās village, about 3 miles southward of Ras Shaghaf, consisting of two or three stone houses and a few huts, had a population, in 1939, of about 60; Safaij village, about half a mile farther southward, is somewhat smaller. Both these villages have mosques. Landing can be effected on a small sandy beach close southward of the former village.

Jabal Safaij, a conical hill with a flat summit, close southward of the village of the same name, is conspicuous from westward; a village, with a mosque, surrounded by trees, is situated 3½ miles south-westward of this hill.

A reef, which dries, lies about 13 miles north-eastward of Ras al Mishāyu and 2 miles offshore.

Bayādh Dimna (Beiyat Dimna), a reef, the greater part of which dries, borders the coast from a position about 10 miles north-eastward of Ras al Mishāyu to Ras an Nuqda and extends to as far as 4½ miles

Chart 10c.

offshore ; Jezirat Maáwal, lying on this reef, about 3 miles south-westward of Ras an Nuqda and half a mile offshore, is low and wooded. Beyond this reef an extensive sandbank, with depths of less than 2 fathoms (3^m7) over it, extends to about 2½ miles farther east-south-eastward ; Kinatat Hilf, which dries, lies on its eastern edge about 1½ miles westward of Ras Hilf, the north-western point of Masīra. 5

From Ras Shaghaf the north-western coast of Masīra trends about 11 miles north-north-eastward to Ras Hilf and is fringed by a reef, which extends to as far as 2 miles offshore. 10

Bayādh bin Juwaisim (Beiyat bin Jawaisim), the south-western extremity of which is situated about 3½ miles north-westward of Ras Shaghaf, extends 6½ miles north-eastward ; the greater part of this reef dries, and on its south-eastern side, about 6½ miles south-westward of Ras Hilf, lies Jezirat bin Juwaisim. 15

Small vessels with local knowledge can pass on either side of Bayādh bin Juwaisim, but there are several patches, with a least depth of 2 fathoms (3^m7), in the vicinity of this reef.

Dauwa, the principal village in Masīra, situated in a date grove close to the coast, about 6½ miles south-south-westward of Ras Hilf, 20 had a population, in 1939, of about 450 ; the inhabitants are friendly to strangers. Two other villages lie between Dauwa and Ras Hilf. Landing at any of these three villages is difficult on account of the coastal reef.

The dangers northward of Ras Hilf are described on page 420. 25

Anchorage.—Good anchorage for small vessels with local knowledge may be obtained in depths of from 5 to 6 fathoms (9^m1 to 11^m0) about 4½ cables south-eastward of Banat Murshid (*Lat.* 20° 13' N., *Long.* 58° 37' E.).

Small vessels with local knowledge can obtain anchorage in depths 30 of 3 fathoms (5^m5), off Umm ar Rasās, with the ruined tower bearing 142° and Jabal Khairān 207° ; there are depths of from 4 to 4½ fathoms (7^m3 to 8^m2) a little farther offshore.

There is also anchorage for small vessels with local knowledge in depths of from 4 to 5 fathoms (7^m3 to 9^m1) at a distance of from one 35 to 1½ miles westward of Ras Shagraf.

There is also good anchorage in depths of 3 fathoms (5^m5), at a short distance from the coast, with the palm trees close northward of Dauwa bearing 112°.

Chart 3786.

There is anchorage in depths of from 37 to 39 feet (11^m3 to 11^m9) about 8½ cables west-south-westward of Ras Hilf, with that point in line with the northern extremity of Masīra, bearing about 070°, and 4½ cables farther eastward in depths of about 24 feet (7^m3). 40

Chart 10c.

Directions.—The following directions were taken from H.M.S. *Challenger's* survey, in 1939. 45

During the north-east monsoon, and in bad weather, the sea breaks heavily over the foul ground at the northern entrance to Masīra channel ; the southern entrance to this channel is at all times to be 50 preferred as the navigable passage is wider and most of the dangers are known.

Southern entrance.—From southward or south-eastward a vessel should steer for a position 4 miles 235° from Ras Abu Rasās, whence

Charts 10c, 3785, 1012, 748b.

Chart 10c.

a 344° course should be shaped and held until the southern peak of Jabal Sawir (page 419) bears 074°, when course should be altered to 353° and continued until the same hill bears 093°; these courses lead
5 westward of all known dangers.

From this latter position a vessel should steer towards Ras al Kalbān with that point bearing 024°; this is the leading mark for approaching the southern entrance to the narrow channel eastward of Zanatiyat. When the cairn on Jezirat Amkads (page 422) bears 008°
10 a vessel should steer towards it on this bearing, which leads through the channel eastward of Zanatiyat, clear of all dangers, in a least depth of 28 feet (8^m5). When Jabal Khairān bears 064½° it should be steered for on that bearing until the centre of Jezirat Sanfar bears 008°; thence the latter islet should be steered for on that bearing until
15 Jezirat Amkads bears 219½°. Course should then be altered to 039½°, with Jezirat Amkads, astern, bearing 219½°, which leads through the fairway in a least depth of 38 feet (11^m5).

When Jabal Khairān bears 146° a vessel should alter course to 035° which leads to the anchorage west-north-westward of Dauwa in a least
20 depth of 27 feet (8^m2).

Westward of Ras Shaghaf the channel divides, passing eastward and westward of Bayādh bin Juwaisim, and thence between Kinasat Hilf and Ras Hilf (*Lat.* 20° 42' N., *Long.* 58° 52' E.).

Northern entrance.—This entrance is not recommended on account
25 of the imperfect survey. The sea is opaque and even in clear weather it is difficult to see the edges of the shoals. Small vessels with local knowledge, and of a draught not exceeding 11 feet (3^m4), might use this entrance in fine weather, but great care is necessary.

Chart 3786.

30 A vessel bound for either of the anchorages west-south-westward of Ras Hilf should follow the directions given on page 420 and, from the outer anchorage, steer southward towards the inner anchorage as indicated by pecked lines on the chart.

Chart 10c.

35 **RAS AN NUQDA TO RAS AL HADD.**—**Aspect.**—From Ras an Nuqda the coast, which is low, sandy, and covered with bushes, trends 13 miles north-north-eastward to Ras ar Ruwais (Sheiblah); a reef fringes the first half of this stretch of coast and extends to as far as one mile offshore.

40 From Ras ar Ruwais the coast trends 43 miles north-eastward to Ras al Jibsh and, for the first 13 miles, consists of cliffs from 30 to 70 feet (9^m1 to 21^m3) high, with sandy spaces intervening; the remainder of this stretch of coast presents an unvaried line of low sand dunes without the slightest trace of vegetation.

45 From Ras al Jibsh the coast, which is low, sandy, and of a desolate aspect, trends about 53 miles north-north-eastward to Ras al Khabba; there is no vegetation near this part of the coast, but in the interior there are extensive date groves and running streams, with patches of cultivation.

50 There are several isolated hills near this stretch of coast; Jabal al Jifān, 18½ miles north-north-eastward of Ras al Jibsh, has a rounded form; Jabal Saih (Jebel Seih), about 8 miles north-north-westward of Jabal al Jifān, a black oblong hill, several hundred feet high is, on a

Charts 10c, 3785, 1012, 748b.

Chart 10c.

west-north-westerly bearing, saddle-shaped ; Haycock, a conical hill, is situated about $1\frac{1}{2}$ miles north-eastward of Jabal Saih ; Jabal al Jumaila, a conical hill, $6\frac{1}{2}$ miles east-north-eastward of Haycock and 2 miles from the coast, is not easily identified from north-eastward. 5

From Ras al Khabba the coast trends about 18 miles northward to Ras al Hadd ; it consists of cliffs, from 50 to 200 feet (15^m2 to 61^m0) high, with a few short breaks, to within about 3 miles of the latter cape, whence it is low and sandy. 10

Jabal Ja'lān, about 19 miles northward of Jabal Saih, is conspicuous, and attains an elevation of about 4,000 feet ($1,219^m2$) ; some towns lie on its southern slope. See views facing pages 426-427.

Jabal al Khamis, about 15 miles north-north-eastward of Jabal Ja'lān, is a dark rugged peak, attaining an elevation of nearly 3,000 feet (914^m4). A range about 9 miles westward of this peak is probably over 6,000 feet ($1,828^m8$) high, and about 7 miles north-north-westward of Jabal al Khamis stands Jabal Kalhāt (*Lat.* $22^\circ 35' N.$, *Long.* $59^\circ 25' E.$), the south-eastern extremity of a range over 4,500 feet ($1,371^m6$) high. See views facing pages 426-427. 20

Jabal as Saffān (Jebel Safanat) lies about $7\frac{1}{2}$ miles southward of Ras al Hadd and about one mile from the coast, with North and South peaks, about $1\frac{1}{2}$ miles apart ; close southward of South peak is a summit about 730 feet (222^m5) high. See view facing page 427.

About one mile northward of Jabal as Saffān is a coastal range, 25 from 400 to 500 feet (121^m9 to 152^m4) high ; between this range and Jabal as Saffān there is a gap, which is well defined from seaward.

Caution.—See page 414. From Ras al Jibsh to Ras al Hadd the inhabitants are of the Bu-Ali tribe and are friendly to Europeans.

Currents.—The currents off Ras al Hadd are strong, variable, and 30 much influenced by the prevailing winds. Usually, from April to September, the current sets northward along and parallel with the coast from Ras al Madraka to Ras al Hadd, at rates of from 10 to 45 miles a day. Sometimes, generally towards the end of the south-west monsoon, while the current sets northward along the coast southward 35 of Ras al Hadd, it sets south-eastward and eastward along the coast west-north-westward of Ras al Hadd, off which point the two currents appear to combine and turn north-eastward at a rate of about 2 knots, which is increased by the east-going tidal stream along the south-western shore of the Gulf of 'Omān. Owing to this current, vessels 40 lying-to at night off Ras al Hadd have been out of sight of land at daylight.

Coast.—Dangers.—Light.—An area of foul ground, over which the sea breaks heavily during the north-east monsoon, and in bad weather, extends from the island of Masīra to Ras ar Ruwais. 45

There is a village about one mile inland from Ras ar Ruwais.

The villages of Ghalat and Sharkh are situated on the coast about $8\frac{1}{2}$ and 21 miles north-eastward, respectively, of Ras ar Ruwais. Heavy surf renders landing impracticable on this stretch of coast.

Ras al Jibsh, a small projection, is sandy. A hill, about 100 feet 50 (30^m5) high, lies close within this point ; it is almost covered with white drift sand but three small dark peaks are visible. A small village is situated on the south-western side of this hill.

On the northern side of Ras al Jibsh a small bay affords landing

Chart 10c.

during southerly winds. Jabal Ja'lān is visible from this vicinity and appears wedge-shaped.

Al Ashkhara (Lashkharah), 27 miles north-north-eastward of Ras al Jibsh, is a straggling village consisting of stone houses and huts, with a fort; Jabal Saih is a good landmark for a vessel making Al Ashkhara.

Ras al Jumaila, about 9 miles north-eastward of Al Ashkhara, is low and sandy; it is backed by a range of low hills, one of which is Jabal al Jumaila (*Lat.* 21° 57' N., *Long.* 59° 35' E.).

10 About 5½ miles northward of Ras al Jumaila is a large black rock blocking the entrance to Khōr Bani Bu 'Ali (Khor Beni Bu Ali), which was discovered by H.M.S. *Kingfisher*, in 1886. It was not examined but it appeared that there was at that time an opening, close to the black rock, leading into a rather extensive creek. In the same year a number of small coasting craft was observed to be hauled up in the creek by H.M.S. *Sphinx*, but when visited by H.M.S. *Cossack*, in April, 1891, the black rock appeared to have become part of the beach, and any entrance that might formerly have existed was entirely closed.

20 As Suwaih, a village about 5 miles north-north-eastward of Khōr Bani Bu 'Ali, consists of mud huts; it is only inhabited during the north-east monsoon.

The coast for about 2 miles north-eastward of As Suwaih is bordered by a coral bank, with a least depth of 3 fathoms (5^m5) over it, which extends to as far as 2 miles offshore; overfalls occur here.

Ras ar Ruwais, about 3 miles south-westward of Ras al Khabba, is low and rocky, with a few sandy hillocks; there is a village here.

Ras al Khabba is low and rocky.

Ras al Junaiz, the eastern extremity of Arabia, 11½ miles northward of Ras al Khabba, is a low cliff; Jabal as Saffān is a good landmark for identifying this point.

Shoals were reported, in 1936, about midway between Ras al Khabba and Ras al Junaiz, lying from 1½ to 4 miles offshore.

Ras al Hadd (*see* views facing this page and page 427), is low, sandy, and difficult to distinguish.

A village of the same name is situated about one mile south-westward of this cape; it consists chiefly of mud huts grouped round a fort with three round towers, and in the vicinity are some date trees. Another round tower which, in 1928, was partly in ruins, stands detached on the northern side of Khōr al Haj (Khor al Hajar), about 2 miles westward of Ras al Hadd.

A light is exhibited from a beacon situated on Ras al Hadd.

Anchorage.—Eastward of Al Ashkhara lies a rocky point from which the coast trends north-north-eastward forming a small bay, apparently free from dangers, the depths decreasing gradually to the shore. Anchorage has been obtained in depths of about 7 fathoms (12^m8) at a distance of from 5 to 7 cables offshore; the colour of the water in this locality is very changeable. Landing can sometimes be effected without difficulty in this bay, although the surf breaks heavily on the coast on either side of it.

There is anchorage, fairly sheltered from northerly winds, in depths of 6 fathoms (11^m0), about one mile north-eastward of Ras ar Ruwais, the point 3 miles south-westward of Ras al Khabba.

Anchorage can be obtained in depths of from 8 to 10 fathoms (14^m6

Charts 1012, 748b.

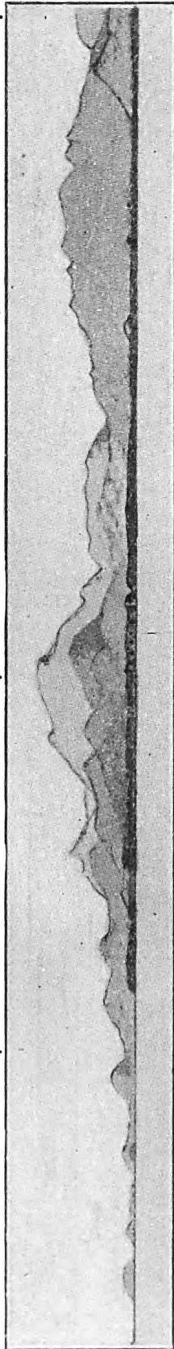


Haycock.

a

Jabal Ja'ilân.

a



As Suwaik tower in line with Jabal Ja'ilân, bearing 281°.

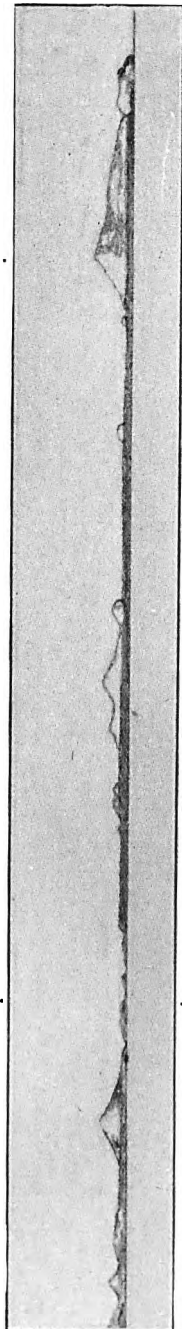
Jabal al Khamis.

b



Tower. Ras ar Ruweis.

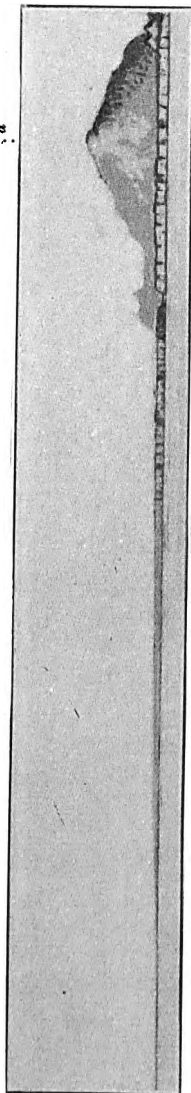
South peak, bearing 342°, distant 17 miles.



Ras al Khabba.

View. in four parts, of southern approach to Ras al Hadd.

Jabal Je'ilân.



Ras al Khabba.

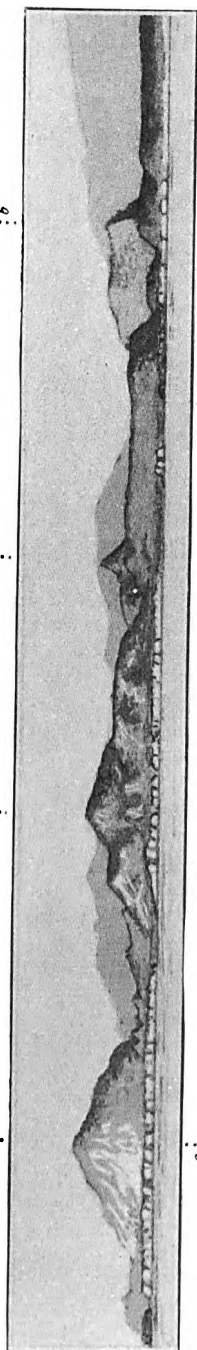
Jabal Je'ilân.

South peak.

Jabal as Saffûn.

North peak.

Jabal al Khamîs.



a :

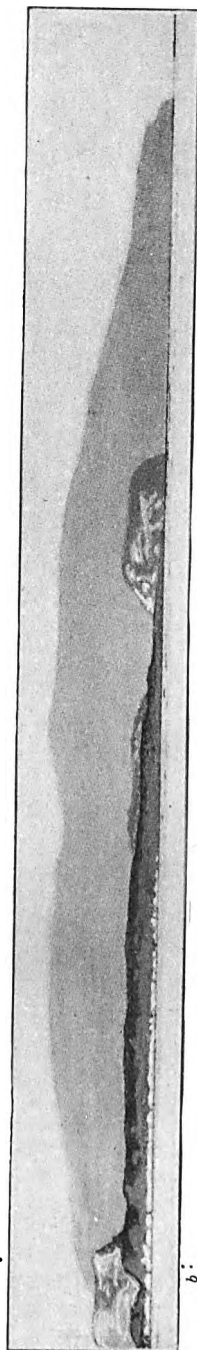
Jabal al Khamîs.

b :

South peak, bearing 257°, distant 11 miles.

Ras al Junaiz.

b :



b :

Ras al Hadd.

View, in three parts, of eastern approach to Ras al Hadd.
(Original dated 1909.)

Chart 10c.

to 18^m3), coral, from 5 to 8 cables offshore, with the village of Al Hadd bearing about 270°; the depths decrease rapidly within 10 fathoms (18^m3), and the bottom is distinctly visible.

Anchorage has been obtained in depths of about 10 fathoms (18^m3), ⁵ good holding ground, and sheltered from south-westerly winds, about 2½ cables northward of the entrance to Khōr al Haj (*Lat.* 22° 32' N., *Long.* 59° 46' E.).

Charts 1012, 748b.

CHAPTER X

THE COAST OF AFRICA FROM RAS SI ANE TO CAPO GUARDAFUI AND
THENCE TO RAS HAFUN*Chart 1012.***GULF OF ADEN.—CAPO GUARDAFUI TO RAS HAFUN.**
—Winds and weather.—See pages 44-47.*Charts 3180, 253.*

- 5 **RAS SI ANE TO RAS BIR.—Aspect.—Beacons.**—From Ras Si Ane (page 138) the coast trends about 30 miles southward to Ras Bir; the northern part is low, sandy, covered with jungle, and fringed by a coral reef which extends to as far as one mile offshore.

- 10 Plateaux de Ghen (Jebel Jan), on the southern part of which stands a beacon, about 12 miles southward of Ras Si Ane, is the highest of some ranges of tableland which closely approach the coast.

Chart 253.

- A beacon is situated on a 1,555-foot (474^m0) summit at the southern end of Plateaux de Gôeuh, about 8 miles westward of the beacon on
15 Plateaux de Ghen.

Southward of Plateaux de Ghen the coast is low and sandy until within about 5 miles of Ras Bir, when it begins to rise towards that point; Plaine de Sadai, an extensive plain, covered with mangroves and brushwood, lies between the coast and the mountains.

- 20 *Chart 3180.*

Off-lying islets and dangers.—Jezirat Seba, lying within a distance of 7½ miles eastward of Ras Si Ane, are described on page 138.

Chart 253.

- 25 A shoal, with a depth of 9 feet (2^m7), coral, the position of which is approximate, was reported, in 1935, to lie about 11 miles north-eastward of Ras Bir and 3½ miles offshore.

Charts 3180, 253.

- Coast.—Beacon.—Dangers.—Light.**—Crique d'Anghar is a shallow inlet 6½ miles south-south-eastward of Ras Si Ane; a grey masonry beacon, which is conspicuous, is situated on the north-eastern side of the entrance to this creek.

Chart 253.

- 35 The coast southward of Plateaux de Ghen (*Lat. 12° 15' N., Long. 43° 23' E.*), to within about 3 miles north-north-eastward of Ras Bir,

Charts 6b, 8e, 2523.

Chart 253.

is fringed by a bank which dries and extends to as far as three-quarters of a mile offshore ; a reef, which is steep-to, fringes Ras Bir and the coast 3 miles north-north-eastward of it.

Ras Bir attains an elevation of 100 feet (30^m5) and is cliffy. 5

A light is exhibited, at an elevation of 165 feet (50^m3), from a white square tower, 39 feet (11^m9) in height, situated about 2 cables within Ras Bir.

Anchorage.—There is open anchorage off the coast eastward of Plateaux de Ghen. 10

GOLFE DE TADJURA.—General remarks.—Golfe de Tadjura is entered between Ras Bir and Ras Djibouti (Jibuti), 25 miles south-south-westward, and extends westward to Ghubbat Kharab at its head ; Iles Musha and some extensive coral reefs lie on the southern side of the entrance to the gulf, within a distance of 10 miles north-north-eastward of Ras Djibouti. 15

The shores of the gulf are high, except in a few places, and the country a short distance inland is mountainous ; the shores are barren but the interior is fertile.

The natives of the northern sides of the gulf and Ghubbat Kharab, and the south-western side of the latter south-eastward to the valley near its middle, and the country for some distance inland, are the Danakil tribe, which is sub-divided into several smaller tribes ; they are Muhammadans. Opinion formerly seems to have been divided as to their character, but the probability is that if treated kindly and their prejudices respected they will act civilly in return. From the valley near the middle of Ghubbat Kharab eastward and south-eastward to Khor Galangaret, 48 miles south-eastward of Ras Djibouti, the coast and the country for some distance inland is occupied by the Aissas tribe. 20
25
30

OUTER PART.—Aspect.—Monts Mabla extend northward from near the coast, on the northern side of the entrance to Golfe de Tadjura, and attain an elevation in Sono Ali, the southern branch of Bati-Sôno, 22 miles westward of Ras Bir, of 3,944 feet (1,202^m1). Other conspicuous peaks are Morne Rouge, 9 miles westward of Ras Bir, with three round summits, about 430 feet (131^m1) high, formed of reddish stones ; Mouriya, the northern mountain of the eastern branch of Monts Mabla, situated 3 miles north-westward of Morne Rouge ; Indhai-Ali, 4½ miles south-westward of Mouriya, and Aramuda, with a broad summit, 4½ miles north-westward of Indhai-Ali. The mountains are thickly covered with trees and the valleys appear to be fertile. 35
40

Islands and dangers.—Lights.—Iles Musha (*see above*) are a group of coral islands and islets lying on a reef and attaining an elevation of about 40 feet (12^m2).

Ile Musha, the eastern island, is the most conspicuous and, from seaward, has the appearance of a dark bank with a lighthouse on it ; there are some clumps of mangroves on this island. 45

A light is exhibited, at an elevation of 66 feet (20^m1), from a white quadrangular masonry tower, about 47 feet (14^m3) in height, situated on the north-eastern point of Ile Musha (*Lat.* 11° 44' N., *Long.* 43° 50' 13" E.).

Ile Maskali, the western island, has a lighthouse on its western point ;

Charts 6b, 8e, 1012, 748b.

Chart 253.

this point can be passed within a short distance, there being no off-lying dangers.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white square tower, about 26 feet (7^m9) in height, situated on the western point of Ile Maskali.

The coral reef, on which Iles Musha lie, dries in places, and detached shoals, lie within a distance of 3 miles eastward and 1½ miles northward and southward of this group; in 1928, a stranded wreck lay on a coral reef 2½ miles west-north-westward of Ile Musha light-tower.

Banc Dankali, 5½ miles eastward of Ile Musha, has a least depth of 22 feet (6^m7) over it; Banc de l'Antarès, lying 5 miles south-eastward of the same island, has a least depth of 42 feet (12^m8); Banc de la Curieuse, 4 miles southward of the same island, has a depth of 49 feet (14^m9), and Banc Maskali, one mile southward of Ile Maskali, a least depth of 10 feet (3^m0).

The channel north-westward of Iles Musha is wide and free from dangers, but the channel south-westward of this group is only 2¼ miles wide between the dangers on either hand.

20 Anchorages.—There is anchorage for vessels with local knowledge in depths of from 6 to 9 fathoms (11^m0 to 16^m5), sand, in a gap in the reef about 7 cables northward of Ile Musha, with the light-tower bearing about 140°; it affords good shelter at all seasons. A good lookout is necessary when approaching this anchorage, as there are several detached rocky shoals lying on either side of the entrance.

During the north-east monsoon good anchorage can be obtained off the north-western side of the reef, on which lie Iles Musha, in depths of 16 fathoms (29^m3), sand, with the western extremity of Ile Maskali bearing about 215° and the northern extremity of Ile Musha 085°.

30 Prohibited anchorage.—Anchorage is prohibited, on account of the existence of submarine telegraph cables, within a triangular area, indicated by pecked lines on the chart, southward and westward of Ile Maskali lighthouse.

Charts 919, plan of Obock harbour; 253.

35 Coast.—Beacons.—Islets and dangers.—Light.—From Ras Bir the coast trends 2 miles westward to Anse Buret, a shallow bight, with a sandy beach affording easy landing.

A shoal, with a depth of 15 feet (4^m6) over it, lies in the southern approach to this bight, 2½ miles west-south-westward of Ras Bir and one mile offshore.

Chart 919, plan of Obock harbour.

Port d'Obock, formed by a bend in the coast between Anse Buret and Cap Obock, 2½ miles west-south-westward, is sheltered from south-eastward and southward by coral reefs, which extend to as much as 1½ miles offshore.

The northern shore of the harbour is an almost vertical cliff of coral rock, about 80 feet (24^m4) high, within which a large plain extends to the mountains inland. The western shore near Cap Obock (*Lat.* 11° 58' N., *Long.* 43° 17' E.) is a cliff of the same kind, about 40 feet (12^m2) high, at the end of a large plain. The north-western shore between these cliffs is a sandy beach, terminating in a ravine, the soil of which is alluvial clay and is inundated in places, at the highest tides, by the sea; it is reported that there are a quantity of mangroves in it. The sandbank which fringes the beach mostly dries.

Charts 253, 6b, 8e, 748b.

Chart 919, plan of Obock harbour.

Rivière d'Obock flows into the harbour about 5 cables north-eastward of Cap Obock ; it is an inconsiderable stream, and dries in summer.

A white stone pile beacon, " D " stands on a hill, 62 feet (18^m9) high, at the head of the harbour ; a beacon, " A," is situated approximately 6 cables west-north-westward of beacon " D " ; and a white stone pyramidal beacon, " C," stands on the coast eastward of Anse Buret. These beacons are not easily distinguished. 5

An old light-tower is situated about 2 cables north-north-westward of beacon " A," and the tower of a mosque 1½ cables south-south-10 eastward of the same beacon.

Bancs du Curieux, which are shallow, extend about 6 cables south-westward from the north-eastern side of Anse Buret. Banc du Surcoul, the north-eastern extremity of which is situated about one cable west-south-westward of the south-western side of Bancs du Curieux, 15 extends 1½ miles west-south-westward and is shallow ; a reef, which dries, lies near its south-western end. Shoal water was reported, in 1941, to have extended southward of this bank.

Passe de l'Est, the channel between Bancs du Curieux and Banc du Surcoul, was reported closed, in 1892. 20

Banc du Laclocheterie, parts of which dry, extends about 6 cables eastward and 2 cables southward of Cap Obock ; it has some large boulders on it.

A light is exhibited, at an elevation of 10 feet (3^m0), from a masonry beacon, situated on the north-eastern extremity of Banc du Laclocheterie. 25

The coastal bank, fringing the north-western side of Port d'Obock, extends to as much as 4½ cables offshore and dries ; Ile Sud and Ile Nord lie on this bank about 1½ cables and three-quarters of a cable, respectively, offshore, about 2½ cables east-north-eastward and 2½ 30 cables north-eastward of Cap Obock, and a rock, which dries one foot (0^m3), lies half a cable south-south-westward of Ile Sud.

Passe du Sud, the channel between Banc du Surcoul and Banc du Laclocheterie, is deep and free from dangers.

Banc du Bisson, lying 5½ cables north-eastward of Banc du Laclocheterie light-beacon, is a continuation of the coastal bank and dries in 35 places.

Banc des Perles, the south-western extremity of which is situated about 6 cables north-eastward of Banc du Laclocheterie light-beacon, extends 2½ cables east-north-eastward, and has a least depth of 2½ 40 fathoms (4^m6) over it ; Banc du Milieu, lying 2½ cables north-eastward of Banc des Perles, has a least depth of 1½ fathoms (3^m2). Several shoals, with a least depth of 1½ fathoms (3^m2), lying between and northward of these two banks, encumber the channel in this vicinity.

The village of Obock (*Lat. 11° 58' N., Long. 53° 17' E.*), situated on 45 Cap Obock, was once the capital of French Somaliland, but is now only a small village. The Residency is a large square white building, with a flagstaff half a cable northward of it. A factory and a penitentiary, white buildings enclosed by walls, are situated about 1½ miles northward of the cape. All the old buildings, except the Residency, 50 are in ruins. Obock had a population, in 1939, of about 300.

Chart 253.

Between Cap Obock and Vallée de Latela, 3½ miles westward, the coast consists of cliffs from 62 to 85 feet (18^m9 to 25^m9) high, broken in

Charts 253, 6b, 8e, 1012, 748b.

Chart 253.

several places by ravines ; Pointe Oursin, at the entrance to this valley, is a low projection, with a shallow bank of sand and mud extending to as much as one mile from it. Vallée de Taguarré, about 2 miles
5 farther westward, has a white patch in it.

Between Pointe Oursin and Arkailé, about $4\frac{1}{2}$ miles west-south-westward, a shallow bank fringes the coast, extending to as much as one mile offshore.

From Arkailé the coast trends about 9 miles south-westward to Ras
10 Duan and is fringed, in places, by a reef ; the coast from Latela to Ras Duan consists of a beach, backed by precipitous cliffs.

The village of Dallai is situated on the coast about $5\frac{1}{2}$ miles south-westward of Arkailé, and the village of Yaia about 2 miles farther south-westward.

15 Ras Duan is a steep cliff, with several higher plateaux within it, extending towards Monts Mabla. On the southern side of the cape is a beach, where boats can land during the north-east monsoon, when there is a heavy swell on the coast between Vallée de Taguarré and Ras Duan.

A reef, which dries, extends a short distance offshore about one mile
20 westward of this cape.

Chart 919, plan of Obock harbour.

Anchorage.—**Directions.**—Port d'Obock is divided into two parts, separated from each other by banks ; the south-western part is called Port du Sud and the north-eastern part Port du Nord-Est.

25 A pier, with a lookout at its head, extends $2\frac{1}{2}$ cables south-south-eastward from a point on the coast, about $7\frac{1}{2}$ cables north-eastward of Cap Obock.

Port du Sud affords anchorage in depths of from 6 to 17 fathoms (11^m0 to 31^m1), protected from all except southerly winds, which
30 sometimes blow strongly and render this anchorage dangerous. A mooring buoy, with the cables extending from it, lies sunk in about the middle of this part of the harbour ; several anchors and cables have also been lost from other vessels in its vicinity ; the position of this sunken buoy is not marked, so caution is necessary in anchoring
35 here. The bottom is compact mud, with good holding ground.

A vessel approaching from north-eastward should steer to pass well southward of Banc du Surcouf, so as to avoid the shoal water reported southward of that bank, and when Cap Obock bears 290° it should be steered for on that bearing until southward of Passe du Sud ; a vessel
40 should enter with the tower of the mosque, beacon "A," and the old light-tower in line bearing 337° and anchor on or near this leading line in depths of about 12 fathoms (21^m9), with Ile Sud in line with the flagstaff on Cap Obock (*Lat. $11^\circ 58' N.$, Long. $43^\circ 17' E.$*), bearing 260° , or in depths of 10 fathoms (18^m3) about $1\frac{1}{4}$ cables south-south-
45 westward of this position.

Port du Nord-Est is more roomy than Port du Sud and affords anchorage in depths of from 5 to 8 fathoms (9^m1 to 14^m6). Vessels can seek shelter here in bad weather, but the only entrance is from Port du Sud.

50 A vessel proceeding to this inner anchorage must pass through a straight but narrow channel, with a least depth of 7 fathoms (12^m8) in the fairway, southward of Banc des Perles and Banc du Milieu ; this channel should be buoyed beforehand, or the vessel should be navigated from aloft with the sun in a favourable position.

Charts 253, 6b, 8e, 1012, 748b.

Chart 253.

There is anchorage, in depths of 11 fathoms (20^m1), good holding ground, about 3 miles westward of Cap Obock, with the eastern side of Vallée Latela bearing 310°, distant one mile; it is sheltered from northerly winds.

Small vessels with local knowledge can obtain anchorage off Dallai, where landing can be effected on the beach; small vessels with local knowledge can also obtain anchorage off Yaia.

Winds and weather.—Climate.—A northerly wind, dry, scorching, and loaded with sand, may spring up suddenly, chiefly during the south-west monsoon, and sometimes blows very hard. The south-westerly wind prevails generally in the morning, and the northerly wind rises suddenly in the afternoon and lasts to the middle of the night; sometimes it continues through the night, decreasing in force, but resuming greater strength towards 0700 or 0800, and blowing in this manner constantly for 3 or 4 days; its coming is always indicated by the whirlwinds of sand which it raises in the valley and on Obock plateau.

The country is not unhealthy, and the temperature is bearable in winter, but precautions against the sun should always be taken.

INNER PART.—Aspect.—Between Ras Duan and the entrance to Ghubbat Kharab, about 26 miles south-westward, the coast is almost entirely low and sandy. It is the edge of a plain which rises gradually to the spurs from Massif du Gudda (Balabari or Jebel Gudeh), a range 22½ miles westward of Ras Duan; the plain commences just westward of Ras Ali, a promontory 6½ miles west-south-westward of Ras Duan, is narrow in the neighbourhood of Tadjura, a village 3½ miles west-north-westward of Ras Ali, and then broadens to Ambabo, a village about 4 miles west-south-westward of Tadjura, where it attains a breadth of a little over 2 miles; it then contracts and ends at the foot of the cliffs at the entrance to Ghubbat Kharab. The plain is wooded throughout; mimosas prevail and, in places, form thick coppices.

Massif du Gudda, a conspicuous mountain range of tableland, attains an elevation of 5,577 feet (1,699^m9); Pic Deloncle and Pic Lagarde, situated at the eastern end of this tableland, are thickly wooded. Other conspicuous summits are Morne Noir, 3½ miles northward of Pic Deloncle, and Les Trois Rois, rounded summits of equal height, 3½ miles south-south-westward of Pic Lagarde (*Lat. 11° 45' N., Long. 42° 40' E.*); these summits are also densely wooded.

Chart 253, plan of Jibuti bay.

Baie de Djibouti.—Baie de Djibouti is entered between Plateau du Héron, situated 6½ cables north-north-westward of the northern extremity of Ras Djibouti (page 429) and Pointe Noire, 4½ miles west-south-westward; the head of the bay is filled with a coral reef which dries. Rivière d'Ambouli flows into the head of this bay, about midway between Ras Djibouti and Pointe Noire.

Ras Djibouti is the low rocky extremity of a peninsula extending north-north-eastward from the eastern side of Baie de Djibouti; this peninsula is formed of three plateaux of coral rocks, viz., Plateau de Djibouti, Plateau du Serpent, and Plateau du Marabout, on which plateau stands the town of Djibouti (Jibuti).

Plateau du Héron is a coral islet, from 19 to 23 feet (5^m8 to 7^m0) high, connected with Plateau du Marabout by a road.

Charts 253, 8e, 748b, 2523.

Chart 253, plan of Jibuti bay.

The coral reef, which fills the head of Baie de Djibouti, extends about one mile westward of Pointe du Héron, the western extremity of Plateau du Héron; this part of the coral reef is known as Banc du Héron and forms the eastern side of the entrance to the anchorage; the western side of the anchorage is formed by Récif d'Ambouli and Banc des Salines, described on page 435, which afford it considerable shelter. This anchorage is the largest and safest on this coast, but communication with the shore is sometimes difficult in June, July, and August on account of a rough sea; the harbour, proper, is an artificial one, formed by jetties, and occupies the greater part of the eastern side of the anchorage.

Port du Héron is a small shallow bay on the southern side of Banc du Héron; there are two jetties for lighters here, accessible to boats at all states of the tide.

Pointe Noire is low, but terminates in two small hills of a brownish colour.

Tidal streams.—The tidal streams in the bay are scarcely perceptible; the stream sets generally eastward during the falling tide and westward during the rising tide, at a rate rarely attaining one knot.

Winds.—During May and the first half of June is a period of almost complete calm. Northerly winds are very rare at Djibouti, and the sea is nearly always smooth, so the anchorage is considered safe. During the south-west monsoon a short choppy sea is sometimes, but rarely, experienced, caused by the swell on the northern side of Golfe de Tadjura being deflected and entering the anchorage from north-eastward.

Dangers. — Light-buoys. — Beacons. — Lights. — Récif du Météore, lying $2\frac{1}{2}$ miles north-westward of Pointe du Héron, with a least depth of 3 feet (0^m9) over it, is the northernmost reef on the western side of the approach to the anchorage in Baie de Djibouti; Banc du Pingouin, with a least depth of 9 feet (2^m7), lies about 6 cables southward of Récif du Météore.

Banc du El Hadj consists of two patches, with a least depth of 19 feet (5^m8), lying $1\frac{1}{2}$ miles west-south-westward of Récif du Météore; between this bank, on the western side, and Récif du Météore (*Lat. 11° 39' N., Long. 43° 06' E.*), and Banc du Pingouin, on the eastern side, there are several shoals, with a least depth of 21 feet (6^m4).

Banc de l'Etoile, with a least depth of 7 feet (2^m1) over it, lies 9 cables south-eastward of Banc du El Hadj, and at the western end of a bank, which has a least depth of 39 feet (11^m9) and extends $1\frac{1}{2}$ miles east-south-eastward.

Banc du Héron, which dries, is marked at its north-western edge by No. 2 light-buoy, painted red, surmounted by a cylinder, and exhibiting a *red flashing light every three seconds*; this light-buoy was reported, in 1944, to have been removed.

A detached reef, which dries, and forms the western side of Port du Héron, is marked on its western side by No. 4 light-buoy, painted red, surmounted by a cylinder, and exhibiting a *red flashing light every six seconds*, and a basaltic stone beacon, cubical in shape, and about 10 feet (3^m0) in height, stands at its south-western end, but it is not conspicuous; within about 3 hours of high water this beacon appears like a black can buoy. This light-buoy was reported, in 1944, to have been removed. Shoals, with depths of 14 and 16 feet (4^m3 and

Chart 253, plan of Jibuti bay.

4^m9), lie about half a cable, respectively, north-eastward and northward of this detached reef.

Récif d'Ambouli, lying with its eastern end about 6 cables westward of the beacon just described, dries, is marked by two similar beacons to the one just described, one near its eastern and the other near its western end; these beacons are not conspicuous, and within about 3 hours of high water they appear like black can buoys. 5

A light is exhibited, at an elevation of 10 feet (3^m0), from a white square beacon situated on the eastern end of Récif d'Ambouli. 10

A detached shoal, with a depth of 16 feet (4^m9), and another, with a depth of 15 feet (4^m6), lie 1½ cables northward and 2½ cables south-south-westward, respectively, of Récif d'Ambouli light-beacon.

Banc des Salines, lying 3 cables southward of Récif d'Ambouli, dries, and is marked at its western end by a basaltic stone beacon, cubical in shape, and about 10 feet (3^m0) in height; this beacon is not conspicuous, and within about 3 hours of high water it appears like a black can buoy. A shallow spit extends 1½ cables eastward of Banc des Salines and within a radius of about three-quarters of a cable of this spit are some detached shoals, with a least depth of 3 feet (0^m9). 20

A detached shoal, with a depth of 4 feet (1^m2), lies about 2 cables east-north-eastward of the eastern extremity of the spit extending eastward of Banc des Salines; a light is exhibited, at an elevation of 10 feet (3^m0), from a white square beacon situated on this shoal.

Lights.—Leading lights are exhibited at the head of Baie de Djibouti; the front light is exhibited, at an elevation of 64 feet (19^m5), from a white square tower with a red horizontal band, situated near the mouth of Rivière d'Ambouli; the rear light is exhibited, at an elevation of 105 feet (32^m0), from a white square tower, situated 5½ cables southward of the front light. 30

Jetties.—**Lights.**—The artificial harbour is a basin bounded on the north by Jetée du Marabout (*Lat. 11° 37' N., Long. 43° 08' E.*), which is connected with the railway, and is also known as Jetée Duparchy; on the west by Jetée du Large, on which, in 1938, works were in progress, and by Môle du Fontainebleau, extending south-eastward from the south-western end of Jetée du Large. These three jetties are sometimes referred to as Jetée Nord, in opposition to Jetée du Gouvernement which is Jetée Sud. 35

Môle du Fontainebleau is an oil wharf, with two mooring posts, and a depth of 30 feet (9^m1) alongside. Jetée du Gouvernement, 3½ cables south-eastward of Môle du Fontainebleau, has some landing places which can be used according to the state of the tide. 40

A light is occasionally exhibited from a flagstaff on Plateau du Marabout.

Two lights, vertically disposed, are exhibited at an elevation of 26 feet (7^m9), from a metal structure, situated at the north-western end of Môle du Fontainebleau, and a light, at an elevation of 19 feet (5^m8), from a beacon at the south-eastern end of this jetty. 45

Two lights, disposed vertically, are exhibited from the head of Jetée du Gouvernement, and a light is exhibited, at an elevation of 26 feet (7^m9), from an iron mast, 12 feet (3^m7) in height, situated at the landing place near the elbow of this jetty. 50

An area close south-eastwards of Jetée du Large was dredged, in 1944, to depths of from 26 to 29 feet (7^m9 to 8^m8).

Chart 253, plan of Jibuti bay.

Anchorage.—The usual anchorage is in depths of from $6\frac{1}{2}$ to 7 fathoms (11^m9 to 12^m8), mud, between Récif d'Ambouli and Jetée du Large; vessels of light draught can anchor closer in. The muddy
5 bottom is good holding ground.

In 1936, H.M.S. *Weston* anchored with the light near the elbow of Jetée du Gouvernement, bearing 096°, distant $3\frac{1}{2}$ cables.

There are numbered anchoring berths in the port, the positions of which are shown on a special plan which is supplied to vessels calling
10 here.

The number of the anchoring berth assigned to a vessel is transmitted to her by radio a few hours before the probable time of her arrival; vessels must acknowledge the receipt of these messages. A boat from the Port Officer's department will show the vessel the
15 position assigned; this boat will display, by day, S flag of the International Code of Signals and, at night, exhibit a *white* light above a *red* light.

As the vessel arrives in the assigned berth, the boat sounds her whistle and the flag, or the lights, are dipped

20 The small shallow Messageries Maritimes harbour lies between two piers extending from the western extremity of Plateau du Marabout.

Prohibited anchorage.—Anchorage is prohibited in an area 220 yards (201^m2) on either side of the line of the leading lights, to avoid masking the lights.

25 *Chart 253, with plan of Jibuti bay.*

Directions.—There are no pilots at Djibouti, but there is little difficulty in entering the anchorage either by day or night.

The approach to Baie de Djibouti, passing northward of Iles Musha, is the only one that should be used; the eastern approaches are only
30 used by native craft.

A vessel approaching from north-eastward should steer for a position about 5 miles north-north-westward of Ile Musha light (*Lat.* 11° 44' N., *Long.* 43° 13' E.), and then gradually alter course southward so as to bring the leading lights in line, bearing 184 $\frac{1}{2}$ °, and also in line with
35 Direction hill, $4\frac{1}{2}$ miles southward of the rear light; this line leads westward of Ile Maskali and the dangers southward of it, eastward of Récif du Météore and Banc du Pingouin, and through the fairway to the anchorage.

Should the leading lights be obscured by sandstorms, which are
40 caused by the "khamzin," a vessel, when westward of Ile Maskali, can bring Pointe du Héron in line with a group of pillars situated on Plateau du Serpent, bearing 161°; this leading line leads from northward clear of all dangers and can be held to within a prudent distance until the leading lights can be identified.

45 *Chart 253, plan of Jibuti bay.*

Town.—The town of Djibouti, which is the seat of Government of French Somaliland, contains a number of stone houses, some of which are white and conspicuous from seaward, as is also a white mosque. The population, in 1939, was about 15,000, including 500 Europeans.

50 A British Consular officer is resident here.

The Residency of the Governor is situated on the north-western point of Plateau de Djibouti; a flagstaff, 20 feet (6^m1) in height, with which communication can be made by signal, stands close north-westward of the Residency.

Charts 253, 8e, 748b.

Chart 253, plan of Jibuti bay.

The native village of Bendar Gueddid is situated close southward of the town of Djibouti.

Plateau du Serpent has a number of buildings on it, with a conspicuous water-tower at its south-western end; there are several houses with verandas on its northern part, which are conspicuous from seaward. 5

Plateau du Marabout is connected with Plateau du Serpent by an isthmus; on the plateau stand several one-storied houses, a flagstaff, and a water-tower, which are conspicuous from seaward. 10

Communications.—Djibouti has regular steamer communication with all parts of the world.

There is railway communication with Addis Ababa, the capital of Abyssinia, via Harrar, and there is also telegraphic communication with these towns. 15

There is a Radio station here, *see* page 25.

Port facilities.—Stocks of coal and fuel oil are maintained; the latter can be taken in alongside Môle du Fontainebleau. Coal is put onboard at the anchorage by natives at a rate of about 100 tons an hour. 20

Fresh provisions are obtainable, but vegetables and fruit are scarce. There is a soda-water factory and an ice-making plant.

Water is laid on to one of the piers in Port du Héron; ships at the anchorage are supplied from water-boats, fitted with pumps.

There are several cranes, one with a lifting capacity of 20 tons; there is also one floating crane, with a lifting capacity of 50 tons. 25

Tugs and lighters are available.

Small repairs can be executed.

A time signal is made. 30

A hospital (*Lat. 11° 37' N., Long. 40° 09' E.*) is situated on the northern part of Plateau du Serpent. The quarantine station is situated on Plateau du Héron.

The harbour office is on Plateau du Marabout, at the root of Jetée du Marabout. 35

Shipping.—In 1938, 643 vessels totalling 2,823,096 tons, entered this port.

Chart 253.

Coast.—Dangers.—From Pointe Noire the southern coast of Golfe de Tadjura trends about 4 miles westward to Khor Ambadu and is fringed by a shallow rocky bank; between Pointe Noire and Baie Doralé, about one mile westward, it is low and swampy, and thence to Khor Ambadu it is composed of steep cliffs, from 400 to 500 feet (127^m9 to 152^m4) high. 40

Chart 253, plan of Khor Ambadu anchorage.

Numerous shoals, with depths of less than 3 fathoms (5^m5) over them, the positions of which can best be seen on the chart, lie within a distance of 6 cables northward of Khor Ambadu. A detached reef, which partly dries, lies with its southern extremity about 9 cables westward of the eastern entrance point of Khor Ambadu and half a cable offshore; this reef extends about 3½ cables northward and eastward. 45

Khor Ambadu extends about 5 cables south-eastward between two high dark volcanic cliffs; it is filled with the coastal reef, which dries.

Charts 253, 8e, 748b.

Chart 253.

Between Ras Duan (page 432) and Ras Ali, $6\frac{1}{2}$ miles west-south-westward, the northern coast of Golfe de Tadjura forms a bay, the western shore of which is fringed by a coral reef extending to as far as 5 $3\frac{1}{2}$ cables offshore; Mersa Duan is a gap in this reef.

Anse de Ras Ali, close westward of Ras Ali, is a narrow inlet between two cliffs, with a sandy beach on its eastern side.

From Anse de Ras Ali the coast trends about 3 miles westward to Tadjura, and is rocky, precipitous, and steep-to, to within one mile 10 eastward of Tadjura where a shallow spit extends about a quarter of a mile south-south-westward; it then becomes low and sandy.

Chart 2090, plan of Tadjura anchorage.

Tadjura is a small village standing close to the coast and is the residence of the Sultan of the Danakil tribe; there are three conspicuous 15 mosques in this village, of which Grande Mosquée, the northernmost one, is situated about half a cable inland. A tower stands about one cable north-eastward of Grande Mosquée, and a fort, consisting of a white tower and a red-roofed building, surrounded by walls, which is conspicuous from eastward, stands on a hill at the back of the village.

20 A rock, which dries, lies about $3\frac{1}{2}$ cables offshore and 4 cables west-south-westward of Pointe Sher Mahamat, the eastern entrance point of the small bay, on the north-eastern side of which is Tadjura; a shoal, with a least depth of $1\frac{1}{2}$ fathoms (2^m3) over it, lies about 2 cables south-eastward of Pointe Agaraf, the western entrance point of this 25 bay, and a rock, with a depth of less than 6 feet (1^m8), about one cable south-eastward of the same point. The shores of this bay are fringed by a bank, on which are two rocks which dry; this bank extends to as far as $2\frac{1}{2}$ cables offshore. It was reported, in 1926, that the depths in this bay were less than those charted.

30 *Chart 253.*

Between Tadjura (*Lat. $11^{\circ} 47' N.$, Long. $42^{\circ} 53' E.$*) and the entrance to Ghubbat Kharab the coast is bold; it is exposed to easterly winds, and, except in periods of calm, boats can only land on it with difficulty. Near Tadjura, and for 9 miles westward of it, the mountains recede 35 about 3 miles from the coast, but thence westward they approach it. The coast westward of Tadjura is flat and sandy; it is fringed by a bank for about $3\frac{1}{2}$ miles westward of this village, and forms a small bight east-north-eastward of Ambabo.

Ambabo, a village on the coast about 4 miles west-south-westward 40 of Tadjura, can be identified by a group of palm trees.

Between Ambabo and Pointe des Palmiers, about 6 miles south-westward, the coast is fringed by a bank of sand and coral, extending to as far as 2 cables offshore.

Pointe des Palmiers is a slightly projecting sandy point, 50 yards 45 (45^m7) within which stands a clump of palm trees; about three-quarters of a mile inland rises Mont du Sphinx, detached from Massif du Gudda.

Fort Sagallo, one mile west-south-westward of Pointe des Palmiers, is in ruins.

50 Between Pointe des Palmiers and the entrance to Ghubbat Kharab, 8 miles south-south-westward, the coast forms a slight indentation; a shallow bank, extending to as much as half a mile offshore, fringes this coast for a distance of about $4\frac{1}{2}$ miles north-north-eastward of the entrance to Ghubbat Kharab.

Charts 253, 8e, 748b.

Chart 253.

From Khor Ambadu the southern coast of Golfe de Tadjura trends 9 miles westward to Ras Eiro.

A detached shoal, with a depth of less than 6 feet (1^m8) over it, lies close offshore about 1½ miles westward of Khor Ambadu, and a shallow bank fringes the coast for a distance of about 4½ miles westward of this shoal. A rock, about 8 feet (2^m4) high, lies close offshore about 2½ miles east-south-eastward of Ras Eiro, and about half a mile westward of this rock a spit, with a depth of 10 feet (3^m0) over it, extends half a mile offshore; the eastern side of Ras Eiro is fringed by a shallow bank, with a least depth of 6 feet (1^m8).

Ras Eiro is a narrow, rather high, projection connected with the mainland by a sandy isthmus; it is covered with bushes and is a good landmark.

From Ras Eiro to Ras Korati, 2½ miles west-south-westward, the coast is indented and steep-to; the spurs from the mountains of the interior approach it closely.

Between Ras Korati and Ras Garbo, 3 miles west-south-westward, the coastline recedes a little and is, for the most part, fringed by a bank, with depths of less than 10 fathoms (18^m3).

Charts 2090, plan of Boutres anchorage; 253.

From Ras Garbo to a point on the coast southward of Pointe des Boutres, about 3½ miles west-south-westward, the coast rises gradually and presents several summits.

Chart 2090, plan of Boutres anchorage.

Ilot des Boutres, of which Pointe des Boutres is the northern extremity, lies on the coastal reef and forms the eastern side of Mouillage des Boutres; the cliffs southward of the entrance to Ghubbat Kharab (Lat. 11° 33' N., Long. 42° 41' E.) form the western side of the anchorage, the mainland coast westward of Ilot des Boutres forming its southern side. The southern shore of this anchorage is sandy and stony, and within it lies a plain covered with mimosas.

A shoal, with a depth of 4½ fathoms (7^m8) over it, lies about three-quarters of a cable north-westward of Pointe des Boutres.

Chart 253.

Anchorage.—Baie Doralé, on the southern side of Golfe de Tadjura, affords good anchorage to small craft with local knowledge. It is encumbered with reefs, through the middle of which there is a passage; this, however, is so narrow that it is difficult to find.

Chart 253, plan of Khor Ambadu anchorage.

There is good anchorage in depths of from 13 to 15 fathoms (23^m8 to 27^m4), sand and mud, about 4 cables west-north-westward of the eastern entrance point of Khor Ambadu; there is good shelter here in both monsoons and boats can always communicate with the shore. When north-easterly winds have been strong during the day, and at night a vessel swings to the light land breeze, she rolls heavily, but this can be avoided by keeping a vessel's head east-north-eastward with a kedge.

Chart 253, with plan of Khor Ambadu anchorage.

Oreilles d'Ane, a mountain about 9 miles south-south-westward of Khor Ambadu, is a good landmark.

Chart 253.

Mersa Duan, on the northern side of Golfe de Tadjura, affords good anchorage to small vessels with local knowledge during the south-west

Charts 253, 8e, 748b.

Chart 253.

monsoon ; it is not a good anchorage during the north-east monsoon, nor when easterly winds prevail.

Anse de Ras Ali affords anchorage to small vessels with local knowledge, sheltered from all winds, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), mud, within the bar, over which there is only a depth of 1½ fathoms (2^m7) ; it is necessary to moor here as the anchorage is restricted.

Chart 2090, plan of Tajura anchorage.

10 Small vessels with local knowledge can obtain anchorage in a bight in the coastal bank south-westward of Tadjura, in depths of from 6 to 12 fathoms (11^m0 to 21^m9) ; during the south-west monsoon this anchorage is untenable. Grande Mosquée is a good landmark for a vessel making this anchorage ; care must be taken to avoid the rock, 15 which dries, 4 cables west-south-westward of Pointe Sher Mahamat, also the rock on the coastal bank, about 1½ cables northward of the former rock. The western entrance point of Anse de Ras Ali must be kept open southward of the sandy eastern entrance point of the anchorage.

20 Anchorage, with shelter from westerly winds, was obtained by the French man-of-war *Diana*, in 1924, in depths of from 19 to 22 fathoms (34^m7 to 40^m2), with Grande Mosquée bearing 010°, and the rock, which dries, lying close south-westward of Pointe Agaraf, bearing about 288° ; this vessel also obtained anchorage, with shelter from easterly winds, 25 in depths of 19 fathoms (34^m7), with Grande Mosquée (*Lat.* 11° 47' N., *Long.* 42° 53' E.) bearing 000° and the same rock about 285°.

Anchorage was obtained by the French man-of-war *Dumont d'Urville*, in 1936, in depths of 21 fathoms (38^m4), sand and mud, with a mosque on the coast in line with the tower one cable north-eastward of Grande 30 Mosquée, bearing 020°.

Chart 253.

There is fairly good anchorage in fine weather or with offshore winds about 2 cables offshore, in depths of from 14 to 22 fathoms (25^m6 to 40^m2), sand and mud, with Ambabo village bearing about 335° ; there 35 are depths of from 3 to 4 fathoms (5^m5 to 7^m3) close to the coast, and the depths increase quickly seaward.

Vessels with local knowledge can obtain anchorage in the small bay close westward of Ras Eiro, on the southern side of Golfe de Tadjura, with shelter from north-easterly winds, in depths of 16 fathoms (29^m3), 40 coral, indifferent holding ground, close to the peninsula.

Chart 2090, plan of Boutres anchorage.

There is sheltered anchorage in depths of from 15 to 17 fathoms (27^m4 to 31^m1), sand, about 3½ cables westward of the southern extremity of Ilot des Boutres, but it is exposed to north-easterly winds. 45 *Charts 2090, plan of Boutres anchorage ; 253.*

Ghubbat Kharab.—Ghubbat Kharab is almost entirely surrounded by steep cliffs of volcanic formation. The northern side consists of precipitous limestone cliffs, from 400 to 2,000 feet (121^m9 to 609^m6) high, intersected by ravines, in which lie masses of rock and large 50 uprooted trees, evidently carried down by mountain torrents. The southern side is a vertical volcanic wall, highest at its eastern end, with a valley about the middle, which is strewn with lava and volcanic remains ; the lava extends 2 or 3 miles inland to the foot of the range of sandhills rising 200 or 300 feet (61^m0 or 91^m4) above the plain.

Charts 253, 8e, 748b.

Charts 2090, plan of Boutres anchorage; 253.

Winds.—On the southern side of Ghubbat Kharab, where the winds are usually stronger than in other parts of Golfe de Tadjura, the high cliffs deflect north-easterly winds to easterly or south-easterly. *Chart 2090, plan of Boutres anchorage.* 5

Entrance.—Islet and dangers.—Tidal streams.—The entrance to Ghubbat Kharab is divided into two passages by Ile Bab (Pass islet); the northern side of this islet is steep-to, but a shallow bank extends about half a cable from its south-western side, a few yards off its eastern side, and about $1\frac{1}{2}$ cables south-south-eastward of it. 10

Grande Passe (Great pass), the southern passage, is only practicable for small vessels with local knowledge and of a draught of less than 6 feet (1^m8), as with any wind, and the strong tidal streams, large waves are caused in the middle of this passage endangering small craft. Petite Passe (Little pass), the northern passage, lies between steep 15 shores; just northward of the entrance are some ruins.

The tidal streams rush through these passages with great rapidity, causing whirls and rippings, giving them a dangerous appearance, and in Petite Passe (*Lat. 11° 33' N., Long. 42° 41' E.*), the one practicable for vessels, at times attain a rate of 7 knots. The passage is 20 sometimes difficult, but never impracticable, by day, for a vessel with a speed of 10 knots, except from very unusual conditions. To enter at the high or low water slack, approach the entrance about three-quarters of an hour after high or low water at Obock; when the passage is well in sight, the time to go through it is easily seen, viz., 25 when the eddies have ceased and the water is smooth, which, however, is usually of short duration, lasting generally from 5 to 10 minutes.

There is no difficulty in entering during the in-going stream, although when it is strong several eddies form in the passage, but they do not affect a vessel's steering. With the out-going stream, entering is more 30 difficult, especially when it is strong and the wind fresh and ahead, when the sea in the approach to the passage is very rough, covered with foam, resembling breakers in appearance. Going out of the passage is always easier.

Charts 2090, plan of Boutres anchorage; 253. 35

Coast.—Islets and dangers.—From the southern entrance point of Ghubbat Kharab the coast, which is clifly, trends about 2 miles south-westward and is fringed by a shallow coral bank; between this latter point and a point about 3 miles south-south-westward the coast-line forms a bay, which is deep and free from dangers. 40

Charts 2090, plan of L'Ile du Diable anchorage; 253.

From the south-western entrance point of this bay the coast trends 7 miles west-north-westward to a point about 7 cables south-westward of Grande Ile du Diable (page 442); this coast is composed of cliffs, decreasing in elevation westward, which are only broken by a valley, 45 about $3\frac{1}{2}$ miles south-eastward of Grande Ile du Diable, where there are some trees.

A shallow bank fringes this part of the coast to within about $2\frac{1}{2}$ miles of Grande Ile du Diable; Ile Parrot, lying close offshore, 3 miles south-eastward of the former islet, is bare and rocky; a shallow bank also 50 fringes the coast west-south-westward of Grande Ile du Diable.

Charts 2090, plan of Boutres anchorage; 253.

The northern shore of Ghubbat Kharab for about 7 cables west-north-westward of the entrance is a vertical, rocky, steep wall; thence

Charts 253, 8e, 748b.

Charts 2090, plan of Boutres anchorage; 253.

to the eastern entrance point of Baie de l'Etoile, 7 cables farther westward, it forms an open sandy bay bordered by a narrow coral reef.

Chart 2090, plan of Etoile anchorage.

- 5 Baie de l'Etoile is a narrow inlet, of which the shores at the entrance are not very high, but farther in they consist of steep rocky cliffs attaining an elevation of 130 feet (39^m6) on the north-eastern side and of 197 feet (60^m0) on the south-western; at its head is a sand and coral beach.

- 10 An islet lies on the coastal bank, three-quarters of a cable offshore, on the north-eastern side of the entrance to this inlet; the coastal bank extends about half a cable south-eastward of this islet.

A shallow bank extends about half a cable south-eastward of Pointe de l'Etoile, the south-western entrance point of Baie de l'Etoile.

- 15 A shoal, with a least depth of 4½ fathoms (8^m7) over it, lies about 1½ cables westward of the north-western extremity of the islet (*Lat. 11° 33' N., Long. 42° 39' E.*) on the north-eastern side of the entrance to this inlet, and three coral reefs, which dry, lie on the coastal bank within a distance of 3½ cables north-westward of the north-western

- 20 extremity of the same islet.

Shoal water extends within a radius of about half a cable of the point 4½ cables north-westward of Pointe de l'Etoile.

Chart 253.

- From Pointe de l'Etoile the coast trends 1½ miles westward and then
25 recedes forming Baie Blondeau; the shores of this bay are only moderately high, and at its head is a beach, with a plain, on which stands a few trees, extending inland and rising quickly; the north-western shore of Baie Blondeau is fringed by a shallow bank, which extends to a distance of about a quarter of a mile offshore.

- 30 About one mile eastward of Pointe de Direction, the western entrance point of this bay, a rocky islet, fringed by a bank of coral and sand, lies about half a mile offshore.

Chart 2090, plan of L'Ile du Diable anchorage.

- Grande Ile du Diable, on the western side of Ghubbat Kharab, about
35 4½ cables offshore, has a yellowish-red appearance, and is precipitous and inaccessible; a coral reef and sandbank extend about half a cable from its western side.

- Petite Ile du Diable, lying 1½ cables north-westward of Grande Ile du Diable, is conical and volcanic, the lava on its coasts being clearly
40 visible; a shallow coral bank extends about three-quarters of a cable southward and 1½ cables westward of it.

- The channel between these two islets has moderate depths, but lying in the fairway, at its south-western end, is a shoal, with a depth of 4½ fathoms (8^m7) over it; the bank extending southward of Petite Ile
45 du Diable is always visible.

- The coast westward and northward of Grande Ile du Diable is volcanic and indented; it forms two bights, the two islets described above lying south-eastward of the point which separates these bights; a rock, which dries, lies about 1½ cables offshore in the bight westward
50 of Grande Ile du Diable.

The head of the bight north-westward of Petite Ile du Diable dries out to as far as 2½ cables, and a spit, with a depth of 2½ fathoms (4^m6) over it, extends to a distance of about half a cable from the middle of the north-eastern shore of this bight.

Charts 253, 8e, 784b.

Charts 2090, plan of Salt Lake anchorage ; 253.

Baie du Lac Salé (Salt Lake bay), the north-western part of Ghubbat Kharab, is entered between Pointe de Direction and a point, on which there is a crater, about 3 miles west-south-westward.

On the western side of Baie du Lac Salé there is a small basin, with a least depth of $2\frac{3}{4}$ fathoms (5^m0) in it ; its entrance is closed by a ridge of rocks. The water always runs out of this basin even during the rising tide. 5

The north-eastern side of the bay rises gradually from the entrance, to Bonnet Turc (*Lat.* 11° 36' N., *Long.* 42° 31' E.), a hill situated about a mile north-westward of the head of the bay ; the shore at first consists of moderately high sand dunes and changes gradually to steep cliffs. The south-western side is low, broken, and composed of lava and black scoriae. A narrow rocky peninsula extends about $2\frac{1}{4}$ cables east-south-eastward from the northern side of the bay and close south-westward of it, and nearly parallel with it, lies an islet, with no passage between them. 10 15

The head of the bight on the western side of the head of Baie du Lac Salé is very shallow, and a shallow bank extends about $1\frac{1}{2}$ cables northward of the southern shore of this bight. 20

Chart 2090, plan of Etoile anchorage.

Anchoragees.—Directions.—There is anchorage in the inner part of Baie de l'Etoile in depths of from 11 to 16 fathoms (20^m1 to 29^m3), mud and sand ; this is the best anchorage in Ghubbat Kharab, being sheltered from all winds. 25

A vessel approaching Baie de l'Etoile from eastward should pass not less than $1\frac{1}{2}$ cables southward of the islet lying on the north-eastern side of the entrance, or if approaching from westward a similar distance south-eastward of Pointe de l'Etoile ; after altering course into the inlet a vessel should keep towards the south-western shore until about 3 cables within Pointe de l'Etoile, when she should steer in mid-channel, and anchor as convenient. 30

Chart 253.

There is anchorage for vessels with local knowledge in Baie Blondeau ; this anchorage is frequented by dhows. A vessel entering it should pass eastward of the rocky islet one mile eastward of Pointe de Direction. 35

Chart 2090, plan of L'Ile du Diable anchorage.

Vessels can obtain anchorage about $1\frac{1}{2}$ cables westward of the middle of the western side of Grande Ile du Diable in depths of 16 fathoms (29^m3) ; the anchorage is very limited owing to the reef extending westward of this islet and the great depths close westward of the position given, but it is sheltered, and even with fresh easterly winds it is smooth. Violent squalls sometimes blow from off Grande Ile du Diable. 40

The bight west-north-westward of Petite Ile du Diable affords anchorage to small vessels in depths of from 6 to 12 fathoms (11^m0 to 21^m9) ; it is exposed to easterly but sheltered from south-westerly winds. This is an indifferent anchorage and should only be used when urgently required. 45

Chart 2090, plan of Salt Lake anchorage.

The anchorage in Baie du Lac Salé is on the western side of the head of this bay ; it is entered between the islet lying off the northern side of the bay and the north-eastern extremity of a rocky promontory $7\frac{1}{4}$ cables south-south-westward. 50

Charts 253, 8e, 748b.

Chart 2090, plan of Salt Lake anchorage.

There is good anchorage, in depths of 7 fathoms (12^m8), sand and mud, about 2 cables off the southern side of this bight, but it is open to easterly winds, which cause a choppy sea and frequently sufficient swell
5 to prevent landing from boats on the beach (*Lat. 11° 35' N., Long. 42° 31' E.*).

Chart 253.

RAS DJIBOUTI TO MERSA DALWAKTEAH.—Off-lying bank and dangers.—A bank, with a depth of 59 feet (18^m0), sand
10 and rock, lies 10 miles north-north-eastward of Ras Gumarlah, the south-eastern entrance point of Mersa Dalwakteah, which is situated 11½ miles south-eastward of Ras Djibouti.

Moidubis Kebir, the southern extremity of which lies 5 miles north-north-westward of Ras Gumarlah and 4 miles offshore, extends 1½ miles
15 northward, and partly dries.

Gutta tella Ousal, lying 5½ miles north-westward of Ras Gumarlah and 2 miles offshore, partly dries.

Moidubis Seghir, a reef which dries in places, lies 3½ miles north-north-westward of the same point.

20 The reefs described above are always visible.

Some rocks, with depths of less than 6 feet (1^m8) over them, lie within about 4½ miles northward and north-eastward of Ras Gumarlah.

Coast.—Islets and dangers.—Between Ras Djibouti and Mersa Dalwakteah, 8 miles south-south-eastward, the coast is low and thickly
25 covered with mangrove jungle; it is indented and is fringed by a reef, which extends to as much as 1½ miles offshore.

Ilot Waramos lies on the coastal reef, 3½ miles south-south-eastward of Ras Djibouti and half a mile offshore; there are several rocks, above water, in the vicinity of this islet.

30 Mersa Dalwakteah is almost filled with the coastal reef, which extends 2 miles north-north-westward of Ras Gumarlah; an islet lies on this reef, about one mile west-north-westward of Ras Gumarlah. The village of Loya Ada lies close to the coast at the head of this bay.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies about midway
35 between Moidubis Seghir and the edge of the coastal reef extending north-north-westward of Ras Gumarlah.

Anchorage.—There is good anchorage for small vessels with local knowledge off Loya Ada, in depths of 4 fathoms (7^m3), or farther out in depths of 7 fathoms (12^m8); this anchorage is well sheltered, but
40 can be entered safely only at low water, when the numerous dangers in its approach and at its head are visible.

Charts 253, 6b.

BRITISH SOMALILAND.—The boundary between the French and British Somaliland protectorates is in the vicinity of Loya Ada
45 (*see above*), whence British Somaliland extends eastward to about long. 49° E.

Charts 253, 6a, 6b.

Currents.—The captain of the French man-of-war *Catinat* reported that during the north-east monsoon a southerly current, with rates of
50 from half a knot to 1½ knots, was frequently experienced between Djibouti and Capo Guardafui. Northerly currents have also been experienced between Aden and Berbera (*Lat. 10° 25' N., Long. 45° 00' E.*).

Charts 253, 6b, 8e, 1012, 748b.

Charts 919, plan of Zeila roadstead; 253.

ZEILA AND APPROACHES.—The coast from Ras Gumarlah to Zeila, a town 12 miles east-south-eastward, is fronted by islands, reefs, and shoals to a distance of about 10 miles, with Arab shoal some 10 miles farther off. There are no objects at the latter distance by which a vessel's position can be fixed, and but few at lesser distances, so that considerable caution is necessary when approaching this coast. *Chart 919, plan of Zeila roadstead.*

Off-lying shoal.—**Current.**—Arab shoal, lying 21 miles north-north-eastward of Zeila, has a least depth of $4\frac{1}{2}$ fathoms (7^m8) over it; 10 this shoal is not clearly visible.

During two days in February, with light northerly and north-easterly winds, a current set south-eastward over this shoal at a rate of from one to $1\frac{1}{2}$ knots.

Charts 919, plan of Zeila roadstead; 253.

Coast.—**Islands and dangers.**—**Beacon.**—**Buoy.**—Between Ras Gumarlah and Zeila it is bare and swampy. The coast is fronted by a reef, which dries in places and extends to as much as 3 miles offshore; on this reef lie several islets.

Chart 253.

Ras Gumarlah is low, sandy, and of irregular shape, its eastern side being rounded, while its northern part turns westward in the shape of a duck's bill. From the edge of the reef fronting the eastern side of the point, a narrow sandbank, which partially covers at high water springs, extends 5 miles north-north-eastward; this bank is fringed by Sha'ab Turühât, a reef which extends in the same direction about 3 miles beyond its northern extremity and dries in places. There is a clump of bushes in the bend of the sandbank, about $1\frac{1}{2}$ miles from its inner end, and probably on other parts of it; between it and the coastal reef is a boat channel.

Some rocks, with depths of less than 6 feet (1^m8) over them, lying within $3\frac{1}{2}$ miles westward of the northern extremity of this sandbank, are mentioned on page 444; a detached rock, with a depth of less than 6 feet (1^m8), lies about 2 miles north-north-eastward of the south-western extremity of this sandbank and one mile from its western side, and a similar rock lies $2\frac{1}{2}$ miles south-eastward of the northern extremity of the same sandbank and $1\frac{1}{2}$ miles from its eastern side.

The Mosheikh islets, three in number, lying on the coastal reef $1\frac{1}{2}$ miles south-eastward of the south-eastern side of the sandbank described above, are covered with bushes; between these islets and the sandbank is the boat channel previously mentioned.

Chart 919, plan of Zeila roadstead.

Aibat island, lying $8\frac{1}{2}$ miles northward of Zeila, is low, sandy, and covered with bushes; it lies on the western part of a reef, which dries in places and extends $1\frac{1}{2}$ miles northward, $3\frac{1}{2}$ miles eastward, and about one mile south-eastward of the island.

A beacon, consisting of a sand-coloured truncated cone, surmounted by a black ball, stands on the northern part of this island (*Lat. 11° 30' N., Long. 43° 27' E.*); the beacon is usually visible only when the sun is in a favourable position.

A detached reef, which dries, lies 7 cables west-north-westward of Aibat island, and a shoal, with a depth of $3\frac{1}{2}$ fathoms (6^m9) over it, lies 2 cables south-westward of this reef; from a position about 8 cables south-south-eastward of the south-western end of Aibat island a shoal,

Chart 919, plan of Zeila roadstead.

with a least depth of $1\frac{1}{2}$ fathoms (2^m7), extends about $1\frac{1}{2}$ miles south-westward.

- 5 Saada Din island, $2\frac{1}{2}$ miles southward of Aibat island, is low, sandy, of coral foundation, and for the most part covered with bushes; it lies on a bank of coral, mud, and sand, which dries, and extends to as much as half a mile from its northern, eastern, and southern sides, and one mile from its western side.

- 10 From a position about $8\frac{1}{2}$ cables east-north-eastward of the south-eastern point of Saada Din island a spit, with depths of less than 2 feet (0^m6) over it, extends about $1\frac{3}{4}$ miles north-eastward; within a distance of about one mile east-north-eastward and eastward of this spit are some shoals, with a least depth of $4\frac{1}{4}$ fathoms (7^m8), and 7 cables southward of this spit and $1\frac{1}{2}$ miles from the south-eastern side of Saada Din island is a detached shoal, with a least depth of $2\frac{1}{2}$ fathoms (4^m6). Some 5-fathom (9^m1) patches lie within a distance of about $1\frac{3}{4}$ miles eastward of the shoals, with a least depth of $4\frac{1}{4}$ fathoms (7^m8), mentioned above.

- 20 Channel reef, lying $4\frac{1}{4}$ miles east-north-eastward of Saada Din island, has a least depth of $1\frac{1}{2}$ fathoms (2^m7), coral, over it, and is marked on its eastern side by a spherical buoy, painted white, and surmounted by a white drum; it was reported, in 1940, that this buoy marked the southern edge of the reef.

- 25 Sha'ab Filfil, lying 6 miles eastward of Saada Din island, is composed of coral; this reef never dries but the depths over it are very shallow. It is connected by a bank with the sandbank extending north-eastward from the coast in the vicinity of Zeila.

A shoal, with a least depth of $3\frac{1}{2}$ fathoms (6^m4) over it, lies 3 cables north-westward of Sha'ab Filfil.

- 30 Sea Gull shoal, lying $1\frac{1}{2}$ miles south-south-eastward of Sha'ab Filfil, never dries, and a reef, which dries, lies 6 cables westward of the north-western side of the former shoal. Neither Sha'ab Filfil nor Sea Gull shoal are clearly visible, and the passage between them should not be used.

- 35 Some shoals, with a least depth of $4\frac{3}{4}$ fathoms (8^m7) over them, lie within a distance of about 3 miles westward of the reef 6 cables westward of Sea Gull shoal.

- The low sandy spit on which the town of Zeila is built extends about $2\frac{1}{2}$ miles north-eastward, and a bank, which dries in patches, extends 40 about $1\frac{3}{4}$ miles farther north-eastward.

A patch, with depths of one foot (0^m3) over it, lies $1\frac{1}{2}$ miles north-north-eastward of the town.

Three 3-fathom (5^m5) patches lie within a distance of about 2 miles southward of Saada Din island (*Lat.* $11^\circ 27' N.$, *Long.* $43^\circ 27' E.$).

- 45 A patch, with a least depth of 3 feet (0^m9) over it, lies about $1\frac{1}{2}$ miles south-westward of the south-western point of the same island.

On the western side of Zeila roadstead the channel is almost completely blocked by a line of sandbanks, which dry, extending from Ras Takhushih, a point about 4 miles west-north-westward of the town.

- 50 **Caution.**—The depths in the approaches to Zeila were reported, in 1920, to be much less than those charted.

Anchorage.—Zeila roadstead is available for vessels of moderate draught. The best anchorage is in a depth of 4 fathoms (7^m3), mud and sand, good holding ground, about 2 miles northward of the town.

Charts 253, 6b, 8e, 1012.

Chart 919, plan of Zeila roadstead.

During the north-east monsoon a moderate swell sets into the roadstead, generally increasing towards the afternoon.

Currents.—**Tidal streams.**—A current, the direction of which is usually, but not always, with the wind, often sets along the coast off Zeila; it sometimes attains a rate of three-quarters of a knot. In Zeila roadstead the current often sets against the wind although the latter may be fairly strong. 5

In September, a vessel from Aden to Zeila, with light southerly winds, on the morning of her arrival, was found to have been set 16 miles south-south-eastward during the night, her position having been ascertained at 1800 on the previous day. See also page 16. 10

At springs the tidal streams usually set westward through the roadstead during the rising tide, and eastward during the falling tide, at rates of about half a knot, but the direction is much influenced by 15 winds.

Directions.—The best approaches for a vessel making Zeila are on either side of Channel reef.

The best time to enter Zeila roadstead is the morning. As the land in the vicinity is low and shoals extend a considerable distance off-shore, there are no distinct landmarks by which a vessel's position can be ascertained until close to the reefs; vessels, therefore, bound for Zeila from northward should make Aibat island, as its beacon, poor as it is, is the best mark. 20

When within a line joining Aibat island and Sea Gull shoal, the water is very discoloured, rendering it impossible to distinguish between the deep and shallow water, as can easily be done seaward and in most of the adjacent bays. 25

From about one mile seaward of Sha'ab Filfil, Saada Din island, the beacon on Aibat island, and the town of Zeila should be visible from aloft; Saada Din island, being the highest, is usually seen first. Conical hill, 11 miles west-south-westward of the town, may be a useful landmark in clear weather. 30

A vessel approaching Zeila from northward should, from a position about 5 miles eastward of Aibat island beacon, steer a south-south-westerly course so as to pass about half a mile westward of Channel reef, and between the shoals described on page 446; when the southern extremity of Saada Din island bears about 270°, a west-south-westerly course can be shaped for the anchorage. 35

A vessel approaching from south-eastward, entering by the same passage, should keep in depths of not less than 20 fathoms (36^m6) until Aibat island beacon (*Lat. 11° 32' N., Long. 43° 28' E.*) bears about 290°, when she should steer towards it on that bearing to within a distance of about 5 miles; thence a south-south-westerly course can be steered as previously directed. 45

Town.—The town of Zeila consists of a number of stone houses and huts, the latter predominating; it had a population, in 1935, of about 5,000. The town is administered by a District Commissioner, whose house at the north-eastern end of the town and near the fore-shore, with a flagstaff close to it, is the most conspicuous building. 50

The Custom house stands at the north-western end of the town, with a stone pier extending north-north-westward of it; this pier is not accessible to boats within 3 hours of low water.

There is a small Government hospital and dispensary in charge

Charts 253, 6b, 8e, 1012.

Chart 919, plan of Zeila roadstead.

of a native of India, and temporary isolation huts are provided if necessary.

Water is of indifferent quality and difficult to obtain. Sheep can be
5 procured.

Climate.—The heat at Zeila is excessive during the south-west monsoon, and more than half the native population then move to the highlands in the interior.

Communication.—There is regular steamer communication with
10 Aden.

Charts 253, 6b.

ZEILA TO BERBERA.—**Aspect.**—From Zeila the coast trends 77 miles south-eastward and thence 40 miles eastward to Berbera. It is low and sandy, but within it the country rises gradually towards the
15 mountains, which are at an average distance of 18 or 20 miles inland, but which approach within a few miles of the coast westward of Bulhar, a town 37 miles westward of Berbera, and also in the vicinity of Berbera; the recession of the mountains from the coast in this latter space forms so deep a curve that it appears from the offing to be a con-
20 siderable bay.

Chart 253.

Off-lying dangers.—Sha'ab Sheikh Yakub, $5\frac{1}{2}$ miles east-south-eastward of the town of Zeila and 4 miles offshore, partly dries; a rocky shoal, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, lies about midway
25 between this reef and the coast, and a shoal, with a depth of 5 fathoms (9^m1), lies $1\frac{3}{4}$ miles south-south-eastward of Sha'ab Sheikh Yakub.

A shoal, with a depth of 3 fathoms (5^m5) over it, lies $6\frac{1}{2}$ miles south-south-eastward of Zeila and $1\frac{1}{2}$ miles offshore.

A reef, with depths of less than 6 feet (1^m8) over it, lies about $2\frac{1}{2}$ miles
30 north-eastward of Ras Maskan, a promontory $11\frac{1}{2}$ miles south-south-eastward of Zeila.

A shoal, with a least depth of one fathom (1^m8), over which the sea, at times, breaks heavily, lies about 4 miles south-south-eastward of Ras Maskan and three-quarters of a mile offshore.

35 Sha'ab Salbal (Shab Maduji) lies about 9 miles south-eastward of Ras Maskan and $2\frac{1}{2}$ miles offshore; a part of this reef, near its southern extremity, dries. A shoal, with a depth of 2 fathoms (3^m7) over it, lies three-quarters of a mile westward of the drying portion of Sha'ab Salbal.

40 Sha'ab Galangaret, lying about $6\frac{1}{2}$ miles south-eastward of Sha'ab Salbal and $1\frac{1}{2}$ miles offshore, has depths of less than 6 feet (1^m8) over it.

Coast.—**Dangers.**—The coast from Zeila (*Lat. $11^\circ 22' N.$, Long. $43^\circ 28' E.$*) to Ras Maskan is low and swampy, backed about 2 miles inland by a range of sandhills, from 30 to 40 feet (9^m1 to 12^m2) high;
45 the coast is fringed by a reef extending to as far as $1\frac{1}{4}$ miles offshore.

Khor Salbal (Maduji), about $5\frac{1}{2}$ miles south-south-eastward of Ras Maskan, is reported to be connected by a swamp or backwater with Khor Galangaret, 7 miles south-south-eastward. The coast between these inlets is low and sandy, and the range of sandhills, described
50 above, continues south-eastward about one or 2 miles within the coast; the coast between Ras Maskan and Khor Salbal is fringed by a rocky bank, which extends to as much as three-quarters of a mile offshore.

Charts 253, 6b, 8e, 1012, 748b.

Chart 253.

A low, sandy plain, extends from Khor Galangaret to the base of the mountains, about 20 miles inland.

Chart 6b.

The coast between Khor Galangaret and Berbera has not been closely examined, but there is no known danger except Sha'ab Galangaret previously described; the coast is mostly steep-to but great care should be exercised in approaching it.

Dagarita (Dungareta), about 25 miles south-eastward of Khor Galangaret, is the name of a district; the low coast is here covered with brushwood for many miles, but Dagarita may be identified by two small clumps of palm trees which show well either from south-eastward or north-westward; the high mountains, some distance inland, are visible in clear weather. *See view facing page 450.*

A bank, with a least depth of one fathom (1^m8) over it, fringes the coast of Dagarita, extending to as much as three-quarters of a mile offshore.

Saba Wanak, 13 miles south-eastward of Dagarita palm trees, can be identified by a clump of date palms near the coast.

Jebel Elmis (Almis), about 13 miles south-south-eastward of Saba Wanak and 7 miles inland, is rugged and irregular.

Charts 919, plan of Bulhar anchorage; 6b.

Bulhar, 19½ miles east-south-eastward of Saba Wanak, formerly a town of considerable size, is now practically deserted.

Chart 919, plan of Bulhar anchorage.

A small sandbank, awash in places, lies parallel with, and about a cable off the coast; its western end lies northward of the old residency. The smoothest water for landing is obtained by passing round the western extremity of this bank, but small boats can pass over it at high water.

Chart 253.

Anchorage.—Khor Salbal is much frequented, during moderate weather, by small vessels with local knowledge.

Khor Galangaret can be entered by small vessels with local knowledge, but only at high water.

Chart 6b.

Small vessels with local knowledge can obtain anchorage off Dagarita, in depths of 6½ fathoms (11^m9), about 8 cables offshore.

Saba Wanak (*Lat. 10° 33' N., Long. 44° 07' E.*) affords anchorage to small vessels with local knowledge in depths of 6 fathoms (11^m0), sand, about 7½ cables offshore.

Chart 919, plan of Bulhar anchorage.

In February, 1939, H.M.S. *Fleetwood* anchored in a depth of 7 fathoms (12^m8), with the old residency at Bulhar bearing 155°, distant 4½ cables; there is also anchorage in depths of from 6 to 7 fathoms (11^m0 to 12^m8) about 4½ cables north-westward of the old residency.

Anchorage off Bulhar is not safe during the greater part of the south-west monsoon, but there is partially sheltered anchorage for small craft with local knowledge inside the sandbank fronting the town.

It was reported, in 1939, that the best time to approach this anchorage is at dawn, or shortly after, when the white houses of the town stand out well.

Charts 919, plan of Bulhar anchorage; 6b.

Jebel Elmis, and some conspicuous date trees close eastward of the

Charts 6b, 8e, 1012, 748b.

Charts 919, plan of Bulhar anchorage ; 6b.

town, the only trees near the coast between Bulhar and Berbera, are good landmarks for a vessel approaching Bulhar, the town itself being difficult to distinguish, especially if the sun is behind it ; the old
 5 residency is the first building seen when the sun is high.

There is very heavy surf on this stretch of coast throughout the year, and during bad weather communication with the shore is impossible, sometimes for from 5 to 10 days.

Chart 3530.

10 **BERBERA.—Dangers.—Beacon.**—The harbour at Berbera, which affords good anchorage sheltered from all but westerly winds, is an inlet formed by a low sandy spit extending about $1\frac{1}{2}$ miles west-south-westward from the coast at the northern end of the town and
 15 terminating in Tamar point ; on this spit are several rocks, which dry.

The south-eastern shore of the harbour is fringed by a reef which extends to as much as 3 cables offshore.

A beacon, about 24 feet (7^m3) high, stands on the western end of Tamar point ; its lower part is white dome-shaped masonry, and is
 20 surmounted by two triangles, both point up, one above the other. From a distance this beacon appears like a black spherical buoy, surmounted by a black triangle.

Charts 3530, 6b.

Aspect.—Landmarks.—South-eastward of Berbera is an irregular
 25 mountain range, which on a south-south-westerly bearing shows six peaks, all inclined eastward ; Great Gap, about 8 miles south-eastward of Berbera, is a conspicuous gap or pass in this range (*see* view facing page 451). These mountains, together with Jebel Elmis (page 449), make it easy to identify Berbera.

30 About $11\frac{1}{2}$ miles west-south-westward of the lighthouse on the south-eastern side of the entrance to the harbour and $2\frac{1}{2}$ miles inland, is situated a hill, 816 feet (248^m7) high, with a white sand patch on its northern side, and $2\frac{1}{2}$ miles southward of the lighthouse is a round hill, 372 feet (113^m4) high, with white sand on its eastern side ; this latter
 35 hill is conspicuous, as it is the highest hill in the foreground near Berbera.

On nearing the harbour (*Lat.* 10° 25' N., *Long.* 45° 00' E.) the minaret at the south-western end of the Shaab, the European residential quarter close south-westward of the town, is conspicuous ; Fort
 40 Farhead, on a hill $1\frac{1}{2}$ miles southward of the town, is not easily distinguished, and the beacon on Tamar point is not visible from any great distance. The lighthouse on the south-eastern side of the entrance to the harbour, with a flagstaff about 10 feet (3^m0) high close to it, is black and conspicuous. The date market, a conspicuous open
 45 building, is situated near the southern end of the town, about one cable from the coast.

Chart 3530.

The Sheikh's tomb on the sandy spit forming the north-western side of the harbour is almost hidden by trees. A flagstaff stands on the
 50 roof of Government house within the wall surrounding the Shaab. The radio masts at the Shaab are painted white and are difficult to distinguish against the background of sandy desert.

Lights.—A light is exhibited, at an elevation of 73 feet (22^m3),

Charts 6b, 1012, 748b.

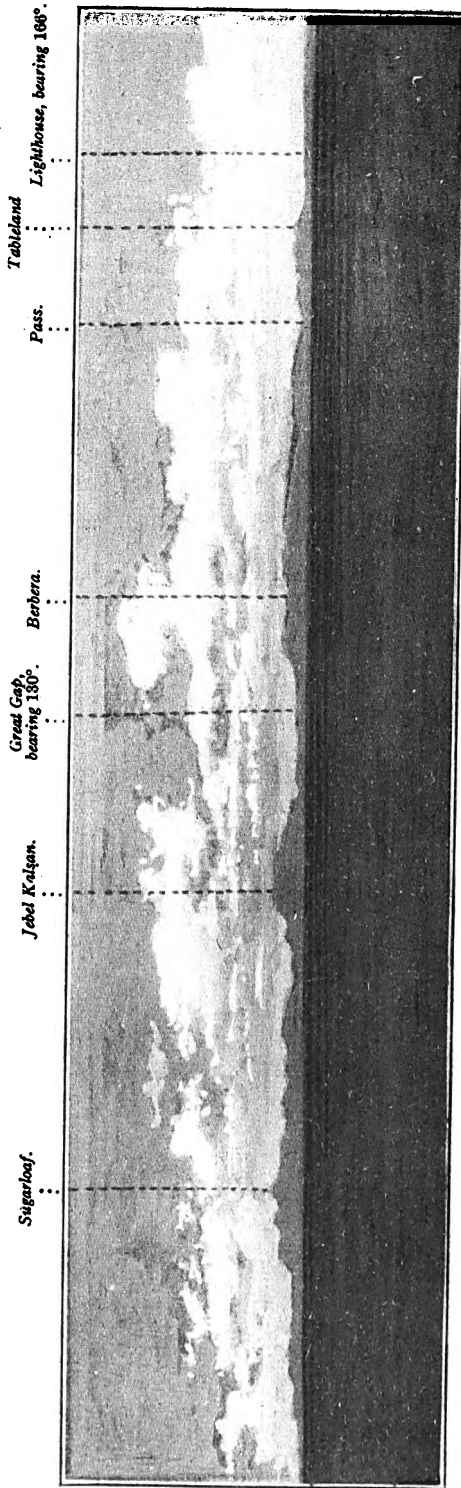
To face page 450.



Palms.

Dagarita, from north-eastward.
(*Original dated 1902.*)

To face page 451.



Hills behind Berbera, distant 5 miles.
(Original dated 1936.)

Chart 3530.

from a lighthouse, painted black, 65 feet (19^m8) in height, situated on the south-eastern side of the entrance to the harbour.

Leading lights are exhibited at the head of the harbour. The front light is exhibited, at an elevation of 20 feet (6^m1), from a red post, 14 feet (4^m3) in height, surmounted by a triangle, point up, situated on the northern side of the head of the Customs pier, which fronts the town; the rear light is exhibited, at an elevation of 40 feet (12^m2) from a red post, surmounted by a diamond, situated about one cable east-north-eastward of the front light.

Caution.—Great care is necessary for a stranger approaching Berbera at night, as, owing to the frequent dust-storms, the light shown from the lighthouse may not be visible; also, during the trading season from October to March, dhows often anchor close inshore near the lighthouse, making it very difficult at times to distinguish the light from their riding lights.

Tidal streams.—The tidal streams in the harbour are almost imperceptible.

Anchorage.—Steamers may anchor in any part of the harbour in depths of from 5 to 10 fathoms (9^m1 to 18^m3), provided a clear passage is left for other vessels; the holding ground is good.

Vessels anchoring here from June to September inclusive should anchor with plenty of room to veer cable, on account of the frequent "Kharifs."

Piers.—Mooring buoys.—The Customs pier is a stone pier with a "T" head which, in 1940, had a depth of 3 feet (0^m9) alongside its head.

A Government wharf lies close northward of the Customs pier; it dries alongside this wharf.

Shaab pier is a screw pile construction with a "T" head, which dries one foot (0^m3); a channel, which had a depth of 17 feet (5^m2), in 1941, but which was reported, in 1943, to be silting, has been dredged through the coastal bank, which dries, on the north-eastern side of this pier.

A jetty, connected with Shaab pier by a sandspit, is situated about 1½ cables north-eastward of the head of that pier (*Lat.* 10° 26' N., *Long.* 45° 01' E.).

Landing can always be effected along the coast between Shaab and Customs piers.

Several mooring buoys are moored off Shaab pier and the jetty north-eastward of it.

Charts 3530, 6b.

Directions.—A vessel from northward should approach with the lighthouse bearing 185° and just open eastward of the 372-foot (113^m4) hill 2½ miles southward of this lighthouse, which leads about 2 cables westward of Tamar point, but care must be taken to guard against an easterly set on to this point.

The light-posts, at the head of the harbour, in line, bearing 068°, lead up the harbour towards the anchorage, but they are not easy to distinguish from a distance.

At night, a vessel should approach with the light on the south-eastern side of the entrance bearing 180° until the leading lights are in line, bearing 068°, when they should be steered for on that bearing; the lights are dim and not easy to distinguish, especially by moonlight.

Charts 6b, 1012, 748b.

Charts 3530, 6b.

The sandspit and beacon at Tamar point are clearly visible on a bright moonlight night.

Chart 3530.

- 5 **Quarantine.**—The quarantine station is on the sandy spit forming the north-western side of the harbour, close westward of the Sheikh's tomb; it was, in 1936, in a poor state of repair. Vessels arriving from an infected port must display the usual quarantine flag by day, and exhibit two *red* lights, disposed vertically, at the main, at night. All
10 vessels are boarded on arrival by the medical authorities, and no communication with boats or the shore is permitted until pratique has been granted.

All shore boats, passengers or cargo, are licensed, and the regulations concerning them are very stringent.

- 15 **Town.**—The town of Berbera lies at the head of the harbour; the majority of the houses are built of masonry. Fronting the shore at the head of the port is the Custom house, a long two-storied white building; southward of the Custom house is the police barracks, a white building.

- 20 The Shaab, within which most Europeans reside, consists of stone houses, surrounded by a wall, 15 feet (4^m6) in height; outside the south-western part of the wall is a mosque with a conspicuous minaret.

- The population of Berbera, in 1936, was estimated at about 3,000 during the hot season and from about 6,000 to 7,000 during the trading
25 season; in 1940, there were 25 English inhabitants.

- Climate.**—The climate, though intensely hot during the south-west monsoon, is not unhealthy; during the north-east monsoon, it is comparatively cool and agreeable, though with a good breeze outside it is generally calm in the harbour. Exposure to the sun should
30 be avoided as much as possible during the summer.

For Meteorological tables, *see* page 61.

Communications.—There is regular steamer communication with Aden.

- There is telegraphic and telephonic communication with Sheikh and
35 Burao; a regular motor mail service connects Berbera (*Lat.* 10° 25' N., *Long.* 45° 00' E.) with these towns, also with Hargeisa.

There is a regular air mail and passenger service to Khartoum.

There is a radio station here; *see* page 25.

- Port facilities.**—Small quantities of fresh provisions can be
40 supplied; drinking water is available but it is unsuitable for use in boilers.

A tug and lighters are available.

There is one hospital and an infectious diseases hospital.

- Trade.**—Nearly all the trade of Berbera is with or through Aden,
45 but there is some small traffic with Indian, Red Sea, and Persian gulf ports. Traders from the tribes in the interior, bringing the produce of the country, begin to assemble in October, and arrive constantly as late as March.

- The trade of Berbera, and of all the Somali coast, is conducted by
50 agents called Abbans, and anyone wishing to open business must appoint one of these, first consulting the authorities.

Chart 6b.

BERBERA TO RAS KHANZIR.—**Aspect.**—From Tamar point

Charts 6b, 1012, 748b.

Chart 6b.

(page 450) the coast trends about 53 miles east-north-eastward to Ras Khanzir and is low and sandy.

There are many hills at moderate distances inland from this coast. Jebel Kalsam is situated 9 miles east-south-eastward of Berbera, 5 and Sugarloaf is a peak $3\frac{1}{2}$ miles eastward of Jebel Kalsam.

Siyara, a sharp conical peak, is situated 13 miles north-eastward of Sugarloaf and $3\frac{1}{2}$ miles inland; there is a similar mountain, 1,258 feet (383^m4) high, $1\frac{1}{2}$ miles east-north-eastward of Siyara. See view on chart. 10

Kamada is a hill lying close to the coast, 12 miles east-north-eastward of the 1,258-foot (383^m4) mountain just mentioned; it shows as a white patch when the sun shines on it, but otherwise is not conspicuous. Black peak, $3\frac{1}{2}$ miles south-south-eastward of Kamada, is conical, and being surrounded by sand, to which its bare rock affords a contrast, 15 is conspicuous. Rugged peak, $8\frac{1}{2}$ miles east-north-eastward of Black peak and $5\frac{1}{2}$ miles inland, is not easily identified, as it appears merged in the high land southward.

There is a range of irregular hills of various heights in the vicinity of Ras Khanzir, amongst which may be mentioned Tree hill, $4\frac{1}{2}$ miles 20 southward of that cape.

Coast.—Dangers.—Ras Alwein, 7 miles east-north-eastward of Tamar point, is low and sandy; a rock, with a depth of 2 fathoms (3^m7) over it, lies about three-quarters of a mile north-westward of Ras Alwein. 25

Siyara, a town, in ruins, is situated on the coast 11 miles east-north-eastward of Ras Alwein; there are numerous graves in its vicinity.

Ras Khatib, 5 miles north-eastward of Siyara, is low and sandy.

The coast between Ras Khatib and Ras Sudda, 17 miles east-north-eastward, recedes a little; a bank, with a least depth of one fathom 30 (1^m8) over it, fringes this part of the coast, extending to as much as one mile offshore.

Ras Walhun (*Lat.* 10° 40' N., *Long.* 45° 30' E.), $7\frac{1}{2}$ miles south-westward of Ras Sudda, is low and sandy; it projects in the middle of the bay between Ras Khatib and Ras Sudda. 35

El Darad, a village $2\frac{1}{2}$ miles south-south-westward of Ras Sudda, consists of one stone house and a number of huts.

Ras Sudda is low and rocky.

Ras Hamra, 6 miles east-north-eastward of Ras Sudda, has a blackish appearance, and is conspicuous from westward. 40

Karin, a village which, in 1940, was deserted, situated 4 miles east-north-eastward of Ras Hamra, has much the same appearance as El Darad, but there are more huts; there is a sand patch on the south-western side of the valley in which this village lies (*see view facing page 458*). A reef and sandspit extend about half a mile offshore from the 45 coast westward of the village.

Ras Khanzir is low and rocky, with sandy beaches on both sides of it; it is easily identified from north-westward by a large triangular patch of sand near it, which is backed by a dark hill. See view facing 50 page 458.

Anchorages.—The depths offshore between Ras Khatib and Ras Khanzir are more suitable for anchoring than either westward of Ras Khatib or eastward of Ras Khanzir; the bottom near the coast is sand and shells and farther out sand and coral.

Chart 6b.

There is anchorage in depths of 10 fathoms (18^m3), about 5 cables offshore, at Siyara, but it is open to winds from seaward.

There is fair anchorage in depths of from 6 to 8 fathoms (11^m0 to 5 14^m6), from one to 1½ miles offshore, at El Darad. Small vessels with local knowledge can obtain shelter from easterly winds in this bay, which is reported to recede more than the chart shows.

There is anchorage in depths of from 4 to 10 fathoms (7^m3 to 18^m3), sand, westward of Karin and from 6 to 8 cables offshore, where there is 10 moderately good shelter from easterly winds.

In February, 1939, H.M.S. *Fleetwood* anchored in a depth of 14 fathoms (25^m6), between 4 and 5 cables offshore, with a prominent stone house at Karin bearing 135°, and the north-western bluff of Ras Khanzir bearing 073°. See view facing page 458.

15 Anchorage was obtained, in 1940, in depths of 20 fathoms (36^m6), with Tree hill bearing 155° and Black peak 220°. All the hills in the foreground showed up clearly in moonlight, and Sugarloaf, 12 miles eastward of Berbera, was conspicuous.

RAS KHANZIR TO RAS SURA.—Aspect.—Between Ras 20 Khanzir and Ankhor (Onkhor), about 23 miles eastward, the coast, which is low and sandy, with bushes on it, recedes slightly.

From a position about 3 miles eastward of Ankhor the coast trends 10 miles east-south-eastward and thence about 40 miles east-north-eastward to Ras Jilao (Jilbo) and is low and sandy; it is backed, a 25 short distance inland, by ranges of undulating hills. There are several villages on this part of the coast.

The coast is sandy for about 6 miles north-eastward of Ras Jilao, whence it is clifty to Ras Khatib, about 4 miles farther north-eastward.

From Ras Khatib (*Lat. 11° 03' N., Long. 47° 08' E.*) the coast trends 30 23 miles east-north-eastward to Ras Sura; to within 3 miles of the latter point it is low, sandy, and scantily covered with bushes, a short distance from the coast; thence it consists of low cliffs, backed by a range of undulating hills.

Jebel Mara, about 2 miles southward of Ankhor, is isolated, and 35 4½ miles south-eastward of it rises a hill, known as Sugarloaf; Ankhor (Onkhor) peak is situated 11 miles southward of Jebel Mara.

Finger peak, 29½ miles eastward of Sugarloaf and 4 miles inland, is pointed.

Jebel Warsangleh, a range of mountains, covered with frankincense 40 and myrrh trees, extends about 140 miles eastward from Pyramid peak, which is situated 11½ miles eastward of Finger peak. This range lies from 10 to 20 miles inland and has no conspicuous peaks, being even along the summit; Jebel Surud Ad (Surut), 11 miles eastward of Pyramid peak, is the highest point of the range.

45 For at least half of its extent this range is a limestone ridge, precipitous on its northern side but sloping gradually southward; at both ends, and towards the lower hills between it and the coast, the range descends in steps, forming generally vertical precipices from 800 to 1,000 feet (243^m8 to 304^m8) high.

50 Jebel Mait, 3½ miles south-eastward of Ras Jilao, is 1,300 feet (396^m2) high, and slopes to a small rocky point on the coast.

Quoin hill, 21 miles east-north-eastward of Jebel Mait and 8 miles inland, can only be identified from northward; Jebel Bur Der Harshau

Charts 1012, 748b.

Chart 6b.

(Burdero), 7 miles north-north-eastward of Quoin hill, is an isolated sugarloaf hill.

Jebel Alat is situated 7 miles east-south-eastward of Jebel Bur Der Harshan, and Jebel Barait $5\frac{1}{2}$ miles south-eastward of Jebel Alat; 5 the latter hill is conspicuous.

Off-lying island.—Mait island (*see view facing page 458*), lying $10\frac{1}{2}$ miles north-north-eastward of Ras Khatib and $6\frac{1}{2}$ miles offshore, is covered with guano; there is a conspicuous cove on the southern side of this island, about 30 feet (9^m1) in length, its entrance being 10 blocked by large stones which have fallen from the cliffs above.

A spit, with a least depth of 2 fathoms (3^m7) over it, extends one cable from the western extremity of Mait island.

Coast.—**Islet and dangers.**—Ghubbat Ankhor (Onkhor) is entered between Ras Khanzir and Ankhor. 15

Khor Shoreh, $3\frac{1}{2}$ miles south-eastward of Ras Khanzir, is a shallow lagoon.

A reef fringes the coast fronting the village of Ankhor. Landing here is bad at any time but impracticable at low water.

Ghubbat Raguda is entered between Ankhor and Ras Jilao; a 20 considerable swell sets into this bay, at times, even during the north-east monsoon, rendering landing dangerous. The shores of the bay are fringed, in places, by a shallow bank.

Wadi Nasuja, a deep ravine with a stream running through it, flows into the sea about 15 miles east-south-eastward of Ankhor; there are 25 several small streams flowing into the sea in this locality during rainy weather.

Raguda (*Lat. 10° 43' N., Long. 46° 37' E.*), a small village on the coast about 11 miles east-north-eastward of the mouth of Wadi Nasuja, is in ruins, and is not easy to identify; there is a large lagoon here and 30 a lot of vegetation.

Shulah village stands on Ras Shulah, about 6 miles east-north-eastward of Raguda, and at the mouth of a stream of the same name; the mouth of this stream can be identified by the vegetation in the vicinity. This village, which consists of a few stone buildings and a 35 number of huts, is inhabited during the trading season, from October to May. Landing can be effected at the village.

Charts 919, plan of Hais anchorage; 6b.

Heis, a village situated on the shore of a small bay about 15 miles east-north-eastward of Ras Shulah, consists of some stone houses and 40 huts and is inhabited during the trading season; a white house and a fort are conspicuous. Landing can be effected near this village at any state of the tide.

Chart 919, plan of Hais anchorage.

Heis (Hais) islet, which forms the north-eastern side of this bay, 45 is rocky, and is connected with the mainland south-eastward by a causeway, which dries about 2 feet (0^m6); from this part of the mainland, which is a bluff named Jebel Ret, a steep conspicuous ridge extends south-westward to a gap south-eastward of the village.

A bank, with depths of less than 3 fathoms (5^m5) over it, fronts the 50 shores of this bay, extending to as far as $3\frac{1}{2}$ cables offshore; some coral reefs, awash, lie on this bank, near its south-western end, and a rock, with a depth of less than 6 feet (1^m8), lies three-quarters of a cable northward of Heis islet.

Charts 6b, 1012, 748b.

Chart 6b.

Ras Jilao, which is low and sandy, is steep-to.

Mait, a small village 5 miles east-north-eastward of Ras Jilao, with few inhabitants, stands on a plain bounded by the western part of
 5 Jebel Warsangeleh, which here approaches the coast within about 12 miles; a small trade is carried on with Aden and Mukalla. The landing here is generally bad, but it has been effected on the coast westward of a cliff about 10 feet (3^m0) high, where there is practically no surf.

10 Marso Senekhan, about 3½ miles north-eastward of Mait, is a small bay formed by a sandspit projecting south-westward from the coast. The landing here is good.

Senacca, about 5 miles east-north-eastward of Ras Khatib, is sheltered by a sand spit extending from the coast. This spit is very
 15 low, and difficult to make out from seaward, but, by steering for the coast about half a mile eastward of a conspicuous strip of fair-sized shrubs, it will soon be visible. Landing is very good, as the spit affords complete shelter from the sea when the north-east monsoon is blowing.

20 Ras Humbeis, 8½ miles east-north-eastward of Ras Khatib, is low and sandy.

Bandar Harshau, about 10 miles east-north-eastward of Ras Humbeis, is a small village usually uninhabited, but there may be a few inhabitants during the trading season, from October to May.

25 A bank extends about half a mile offshore abreast Bandar Harshau, and a reef, which breaks in places, extends from one to 2 cables offshore from a position about 1½ miles westward of Bandar Harshau to Ras Sura (*Lat.* 11° 10' N., *Long.* 47° 30' E.).

Ras Sura is low and bluff; this cape was reported, in 1920, to lie
 30 about a mile northward of its charted position.

Currents.—During the north-east monsoon a counter-current occasionally sets eastward along the African coast, between Mait island and the meridian of 49° E., at a rate of from half a knot to 2½ knots. Currents setting towards the coast, at rates of from half
 35 a knot to 1½ knots, have also been reported.

During the south-west monsoon an eddy current sets westward along the African coast, at a rate of about 1½ knots, to near the meridian of 45° E. This current is, however, not continuous, and easterly and southerly sets are also experienced. The strongest westerly currents
 40 reported during the years 1910 to 1928 were between longitude 48° E. and longitude 50° E., the rate being about three-quarters of a knot.

From March to May, 1909, variable currents were experienced off the Somali coast, but usually setting westward with a rate of about half a knot, and occasionally counter-currents near the coast. A
 45 strong southerly current was experienced in May near Mait island. No current was experienced between Berbera and Las Khereh, about 43 miles eastward of Ras Sura, at the end of February, 1919, except a slight westerly set off Mait island. See also page 16.

H.M.S. *Espiegle*, while proceeding eastward at a distance of about
 50 30 miles offshore, off Ghubbat Raguda, on 15th and 16th August, 1919, experienced a southerly current, with a rate of about one knot, and she was set well into the bay; there was very little westerly current. Mait island was then closed, and she steered 000° for four hours; for the first three hours the island was in sight, and no easterly

Charts 1012, 748b.

Chart 6b.

or westerly set was experienced. Course was shaped direct for Las Khoreh at 2045, and speed adjusted to arrive at 0700. On making the land in the morning, the course 113° as steered, had been made good, but the vessel was 20 miles behind the dead reckoning; a west-north-westerly current with a rate of about 2 knots had apparently been experienced from about midnight. The wind was light, not more than force 2. 5

Anchorage.—Vessels with local knowledge can anchor in Ghubbat Ankor, the best anchorage being in the vicinity of Ras Khanzir; the holding ground is sand. 10

There is anchorage for vessels with local knowledge in depths of about 7 fathoms (12^m8), sand and coral, off the village of Ankor, about 6 cables offshore.

Anchorage was obtained, in 1940, in depths of 20 fathoms (36^m6), sand and coral, with Ankor peak bearing 185° and a hill on the fore-shore 135° . The depths were found to decrease very rapidly when approaching this anchorage, no bottom being found until within 12 cables of the coast; the depths decreased from 80 to 45 fathoms (146^m3 to 82^m3) in a distance of one cable. 20

In February, 1939, H.M.S. *Fleetwood* anchored in a depth of 7 fathoms (12^m8) about one mile north-north-westward of the entrance to the lagoon at Raguda; the holding ground in this vicinity is exceptionally good.

Anchorage can be obtained in a depth of 13 fathoms (23^m8) off Shulah village (Lat. $10^{\circ} 46' N.$, Long. $47^{\circ} 42' E.$), with Finger peak bearing 130° and Heis islet 060° ; Heis islet, Pyramid peak, Finger peak, and Haycock, a peak 11 miles west-south-westward of Finger peak, are useful landmarks when approaching this anchorage. 25

Chart 919, plan of Hais anchorage.

There is anchorage in depths of 12 fathoms (21^m9), sheltered from winds eastward of north-east, with the centre of Heis islet bearing 057° . 30

H.M.S. *Indus* obtained anchorage, in August, 1940, in depths of $12\frac{1}{2}$ fathoms (22^m8), with Heis islet bearing 053° and the fort 165° . 35

In November, 1934, H.M.S. *Penzance* found anchorage, sheltered from strong northerly winds, in a depth of 7 fathoms (12^m8), good holding ground, with the centre of Heis islet bearing 041° , distant $1\frac{1}{2}$ cables.

Chart 6b.

There is anchorage for small vessels with local knowledge, sheltered from winds eastward of north-east, north-north-eastward of the village of Mait, in deep water, close to the coast, and west-south-westward of that village, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), about 4 or 5 cables offshore.

Anchorage has been obtained, in depths of 13 fathoms (23^m8), 5 cables westward of the village of Mait and about 4 cables offshore; the vessel's stern, when swung head-on to the west-north-westerly wind, was in a depth of $7\frac{1}{2}$ fathoms (13^m7). 45

There is good anchorage for small vessels with local knowledge in depths of from 7 to 12 fathoms (12^m8 to 21^m9), in Marso Senekhan, about a cable offshore, well sheltered from winds eastward of north-east; it appears to be frequently used by dhows. In February, 1920, H.M.S. *Odin* and *Clio* anchored here, in depths of 12 fathoms (21^m9), within $1\frac{1}{2}$ cables of the shore.

Charts 6b, 1012, 748b.

Chart 6b.

There is good anchorage for small vessels with local knowledge in depths of 12 fathoms (21^m9), sand, one cable off Ras Khatib.

There is a small creek at Ras Khatib, which appears to be used by dhows.

Small vessels with local knowledge can obtain excellent anchorage off Senacca.

Charts 100b, 6b.

- RAS SURA TO RAS ADADO.—Aspect.**—Between Ras Sura and a point on the coast about 19 miles eastward the coast recedes, forming Ghubbat Kalwein; thence the coast trends 8½ miles eastward to Ras Kalwein. The coast between Ras Sura and Ras Kalwein is low, sandy, and thinly covered with bushes a short distance inland.

Chart 100b.

- From Ras Kalwein the coast trends 13 miles eastward and thence about 7 miles north-eastward to Ras Las Mahan; it is low, sandy, and backed a short distance inland by ranges of undulating hills, two of which are conspicuous from the rough appearance of their cliffs.

- From Ras Las Mahan the coast has an east-north-easterly direction for about 12 miles to Ras Gaan and thence trends about 16 miles eastward to Ras Adado (*Lat.* 11° 20' N., *Long.* 48° 39' E.); it is generally low, with an occasional hill.

Charts 100b, 6b.

- Jebel Warsangeleh (page 454) backs the whole of the coast described above.

See view facing this page.

- Coast.—Dangers.**—Waghdaria, a village 3 miles west-south-westward of the eastern entrance point of Ghubbat Kalwein, consists of two forts and a large number of huts, and is inhabited during the trading season from October to May; it marks the western boundary of Warsangeleh territory. This village is inconspicuous.

Chart 6b.

A rocky spit projects from the coast fronting Waghdaria and is not easily seen; there is good landing westward of this spit.

- Chart 100b.*

Gelwedha, a village about 2 miles west-south-westward of Ras Kalwein, consists of a few huts, and is inhabited during the trading season from October to May; it is fairly conspicuous. Sheep can sometimes be procured here. The landing here is bad.

- A bank, with a least depth of one fathom (1^m8) over it, fringes the coast between the eastern entrance point of Ghubbat Kalwein and Ras Kalwein, extending to as far as one mile offshore.

Ras Kalwein is low and sandy; a spur from Jebel Warsangeleh slopes down to it.

- Dabgo and Goriad, situated on the coast about 7 and 14 miles, respectively, eastward of Ras Kalwein, are the ruins of two small villages; both are inconspicuous.

Chart 100b, with plan of Anchorage of Las Khoreh.

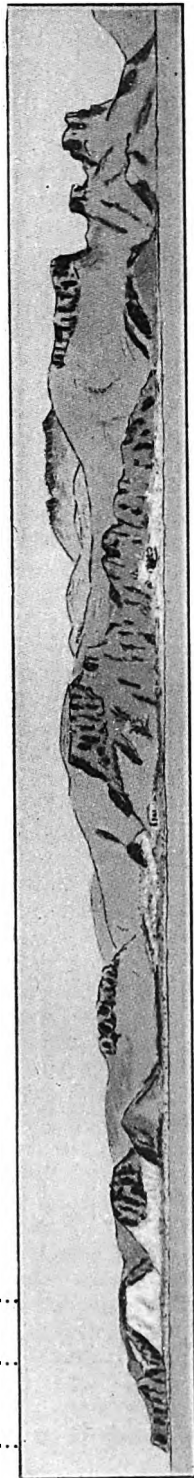
- Las Khoreh, 16½ miles eastward of Ras Kalwein, is the chief town of the Warsangeleh tribe, and consists of two large villages on the coast, about 4 cables apart; in the south-western village, in which is the Gerad's residence, are two stone buildings, resembling forts, which are easily distinguishable amongst the mat huts of which this village

Charts 6a, 6b, 1012, 597, 748b.

To face page 458.

Ras
Khanzir.
Sandy slope (conspic.).
White
Streak.

Karin.



Block House (ruins), bearing 117° ,
distant about one mile.

Ras Khanzir from north-westward.
(Original dated 1930.)



Mait island, bearing 225° , distant 3 miles.
(Original dated prior to 1921.)

a

Bandar Gaan,
Ras Las Mahan.

Conical hill.

Ras Kalarin, bearing 135° ,
distant 7 miles.

Scarified cliff.

a Scarified cliff.

Scarified cliff.
a Scarified cliff.

Jebel Barati. Jebel Alad.

View, in two parts, of coast of British Somaliland between
Ras Sura and Ras Gaan.
(Original dated 1912.)



(a)

Ras Dofáulah, bearing 210° ,
distant 6 miles.



(b)

Ras Adado,
bearing 200° ,
distant 7 miles.

Two views of coast of British Somaliland.



Bandar Ziada, bearing 155° , distant 12 miles.

(Originals dated 1906.)

Chart 100b, with plan of Anchorage of Las Khoreh.

is composed. A conspicuous white fort, a square building, surmounted by a square tower, with a flagstaff close westward of it, is situated $2\frac{1}{2}$ cables south-south-eastward of the north-eastern village; in 1934, a conspicuous dark tree stood about one cable westward of this fort. 5
Chart 100b.

A bluff, about $1\frac{1}{2}$ miles north-eastward of Las Khoreh, appearing dark against the background, is conspicuous, and is visible from a long distance westward; a conspicuous conical hill stands at the end of a ridge east-south-eastward of Las Khoreh, but this hill is only visible 10 on south-south-easterly bearings.

Chart 100b, plan of Anchorage of Las Khoreh.

A bank, with depths of less than 3 fathoms (5^m5) over it, fronts Las Khoreh extending to as far as 2 cables offshore.

The best landing at high water is abreast a high tower in the north- 15 eastern village, and at low water, near the fort at the southern end of the south-western village. There is always a heavy surf, especially during the south-west monsoon, but it is usually less than elsewhere off a house with a tower, and landing may be effected there; the boat should be anchored about 30 yards (27^m4) from the coast. 20

Chart 100b.

Ras Las Mahan (*Lat. $11^{\circ} 12' N.$, Long. $48^{\circ} 13' E.$*) is low and sandy; on it are a conspicuous white tower, numerous huts, and several small sandhills; close south-westward of it lies a brackish creek, which is 25 little more than a swamp.

Ras Gaan is low and sandy; it is reported to lie about 5 miles north-westward of its charted position. There are several inlets in the vicinity of this point, and there is a fresh water lake about $2\frac{1}{2}$ miles southward. Bandar Gaan, a small village, with a fort, is situated on 30 the south-western side of Ras Gaan.

A conical hill, about 11 miles southward of Bandar Gaan, is conspicuous on south-westerly bearings; two hills, about $1\frac{1}{2}$ miles southward of Bandar Gaan, appear from westward as one conical hill, and form a good landmark.

Chart 100b, plan of Anchorage of Bandar Gaan. 35

Sandbanks, which dry 2 feet (0^m6), front the coast for 5 cables on each side of the fort, and inside them is a shallow lagoon.

Chart 100b.

Ruins and some palm trees, about 6 miles east-north-eastward of Bandar Gaan, form a rather conspicuous mark on the coast. 40

Ras Dofduleh, about 9 miles eastward of Ras Gaan, is low and sandy; close southward of it is Flat hill, a conspicuous isolated tableland, which appears as an island from a distance westward. See view facing this page.

Khor Durdureh, the entrance to which is usually blocked by a sand- 45 bank, is situated $4\frac{1}{2}$ miles eastward of Ras Dofduleh. The village of Durdureh lies close eastward of the eastern entrance point of this creek; two white forts stand, one at each end of the village, and in the middle is a large yellow building. Landing is bad here, the surf being broken and dangerous. 50

Several rocks lie a short distance offshore between Khor Durdureh and Adad, a village $1\frac{1}{2}$ miles eastward of Durdureh.

Adad is much larger than Durdureh; sheep can sometimes be obtained here in the trading season, from October to May.

Charts 6b, 1012, 597.

Chart 100b.

Ras Adado is a rocky cliff, 40 feet (12^m2) high ; a little inland of it stands a group of hills, and on the eastern side of the cape there is a conspicuous flat-topped hill. See view facing page 459.

5 *Charts 100b, 6b.*

Warsangeleh territory and inhabitants.—The Warsangeleh tribe, otherwise known as the Sangali Somali tribe, who inhabit the coast from Waghdaria village to Bandar Ziàda (Zaida), 19½ miles east-south-eastward of Ras Adado, are divided into several clans ;
10 they are friendly and obliging to strangers. Their country extends from the coast to the southern side of the limestone mountains, previously described ; it is thickly wooded between the mountains and the coast, as are also the plains on the southern slopes. The belt of level ground near the coast is thinly sprinkled with bushes growing on a
15 plain of white sand.

Chart 6b.

Anchorage.—There is anchorage for vessels with local knowledge, in depths of 10 fathoms (18^m3), off Waghdaria (*Lat. 11° 06' N., Long. 47° 46' E.*), sheltered from winds eastward of east-north-east ; care
20 must be taken when approaching this anchorage to avoid the rocky spit described on page 458.

Chart 100b.

Anchorage can be obtained by vessels with local knowledge in depths of about 7 fathoms (12^m8), off Gelwedha, 8 cables offshore.

25 *Chart 100b, plan of Anchorage of Las Khoreh.*

In 1940, H.M.S. *Indus* obtained anchorage in depths of 7 fathoms (12^m8), about 8 cables offshore, with the south-western village of Las Khoreh bearing 145° and the north-eastern village 105°.

There is good anchorage in depths of from 5 to 9 fathoms (9^m1 to 30 16^m5), sand, or soft sandstone rock, from 4 to 7 cables north-westward of the south-western village ; there is no shelter here except from offshore winds.

H.M.S. *Junco*, in May, 1918, anchored in a depth of 9 fathoms (16^m5), about 5½ cables offshore, with the Gerad's residence in line with a gap
35 in the hills, about 5 cables farther inland, bearing 131° ; little swell is usually experienced here during the north-east monsoon.

In April, 1934, H.M.S. *Colombo* anchored in a depth of 5 fathoms (9^m1), about 2½ cables offshore, with the Gerad's residence in line with a conspicuous gap in the foothills, bearing 134°.

40 There is also good anchorage in depths of from 5 to 6 fathoms (9^m1 to 11^m0), about 4 cables northward of the mosque in the north-eastern village.

Chart 100b, plan of Anchorage of Bandar Gaan.

The anchorage off Bandar Gaan is bad ; there are depths of 12
45 fathoms (21^m9) about 3 cables offshore and the bottom is rocky.

Chart 100b.

Anchorage has been obtained in depths of 10½ fathoms (19^m2), with the western fort at Durdureh, bearing 195°, distant 7½ cables.

RAS ADADO TO RAS CÒRAGHE.—**Aspect.**—Between Ras
50 Adado and Ras Antàra (Hantara), about 54 miles eastward, the coast is mostly low, with occasional hills. Close eastward of the group of hills near Ras Adado a black tableland of basalt and volcanic rock approaches the coast.

Charts 6a, 6b, 1012, 597, 748b.

Chart 100b.

Jebel Warsangeleh (page 454) lies from 18 to 21 miles inland.

A double peak, $18\frac{1}{2}$ miles south-eastward of Ras Adado and $6\frac{1}{2}$ miles inland, is conspicuous; it is one of several in the range of mountains, within the low and broken range of hills near the coast. About 19 miles east-south-eastward of Ras Adado is a conspicuous gap in the coastal range. 5

The coast between Ras al Hâmar, 18 miles west-south-westward of Ras Antàra, and Ras Antàra, is, with the exception of Ras Bur Gâban (Aburgaba), 6 miles south-westward of Ras Antàra, sandy; it is backed by a range of hills from 800 to 1,500 feet (243^m8 to 457^m2) high, but Jebel Antàra (Hantàra), a range near Ras Antàra, attains an elevation of 5,000 feet ($1,524^m0$), and is thickly covered with frankincense and gum trees. 10

Charts 100a, 100b.

15

From Ras Antàra (*Lat. $11^{\circ} 27' N.$, Long. $49^{\circ} 35' E.$*) the coast trends 8 miles eastward to Ras Còraghe (Korai); it is sandy and covered with bushes.

Chart 100b, with plan of Anchorage of Elayu.

Coast.—Dangers.—Lights.—Elayu, a village on the coast 16 miles east-south-eastward of Ras Adado, is easily identified, as it lies at the eastern end of the black tableland described on page 460. Landing can be effected here. Three towers, with a number of huts, comprise the village, within which rises a ridge, about 200 feet (61^m0) high, on which stand numerous cairns; the western tower is a large yellow structure, resembling a castle in appearance; the middle tower, in ruins, is brown; the eastern tower, the smallest, is white and conspicuous. A square white mosque on a low cliff above the foreshore is conspicuous. 25

About 2 miles west-north-westward of this village is a watercourse, which after rain becomes a large stream. 30

Chart 100b.

Bandar Ziàda or Kaù (Kao), 4 miles eastward of Elayu, is a small town with three conspicuous forts, a few white masonry houses, and a large number of huts; it is just eastward of the boundary line between the British and Italian protectorates. There is a conspicuous gap in the hills backing the town. See view facing page 459. 35

The coast in this locality is backed by a low broken ridge of hills.

About $3\frac{1}{2}$ miles eastward of the town there is a stream, fresh in the rainy season, and navigable by boats for about 3 miles; both eastward and westward of Bandar Ziàda lies the bed of a small stream which fills with water after heavy rain, but according to the natives rarely falls. 40

Chart 100b, with plan of Bandar Kassim or Bosaso.

Bandar Càssim (Kassim) or Bosàso, $12\frac{1}{2}$ miles east-north-eastward of Bandar Ziàda, consists of a large number of masonry houses and many huts, with several conspicuous forts and towers, which appear light brown or white from seaward, and is easily identified by the broad plain in its vicinity. 45

About $1\frac{1}{2}$ miles westward of the town is the bed of a stream, which flows into the sea after heavy rain; there is also a conspicuous gap in the coastal range hereabouts. 50

A pier extends north-north-westward from the coast in front of Garesa Arabi, a fort situated at the western end of the town; there is a depth of about 7 feet (2^m1) at the head of this pier

Charts 6a, 6b, 1012, 597.

Chart 100a.

to Capo Guardafui it is backed closely by mountains, except at two or three places where the coast is sandy and covered with bushes.

Chart 6a.

- 5 **Off-lying banks.**—Banks, with a least depth of 40 fathoms (73^m2) over them, lie within a distance of 30 miles north-westward and 34 miles northward of Capo Guardafui (*Lat.* 11° 50' N., *Long.* 51° 17' E.).

Chart 100a.

- Coast.—Dangers.—Lights.—Beacons.**—The coast, from Ras
10 Còraghe to Cándala, is almost steep-to; from close north-eastward of Cándala, for a distance of about 4 miles east-north-eastward, it is fringed by a bank, with a least depth of one fathom (1^m8) over it, extending to as much as one mile offshore.

- Cándala is an important village, consisting of a fort, several masonry
15 houses, and numerous huts; it lies behind some sandhills. The fort stands eastward of a group of trees which are conspicuous from westward. *See* view facing this page. Incense and gum, obtained from the mountains, are exported to Aden.

- Khor di Botiàla (Bandar Khor or Botiala), the entrance to which lies
20 between two hills about 3 miles east-north-eastward of Cándala, is more conspicuous when approaching from westward than from eastward; it trends about 1½ miles south-eastward from the entrance and thence 2½ miles south-south-westward, between two ranges of hills, 400 feet (121^m9) high. Streams flow into this creek during the rainy season.

- 25 Cándala, when approaching from westward, and a low white sandhill, near the coast, about 3½ miles eastward of the entrance to the creek, when approaching from eastward, are good landmarks for identifying the entrance.

- The village of Bandar Ciadid lies at the mouth of Khor di Botiàla
30 and, on the north-eastern shore of the creek, about 2½ miles within its entrance, the village of Botiàla; the latter village, which is not visible from seaward, had, in 1936, a population of about 200.

- Ras Dürbo, about 26 miles east-north-eastward of Khor di Botiàla, is a small rocky point, difficult to identify from seaward; the village of
35 Dürbo, consisting of some masonry houses and a number of huts, is situated on a low plain and at the mouth of a valley, about 2½ miles east-north-eastward of the point. Close north-eastward of this village stands a group of palm trees visible from some distance seaward.

- Bandar Meràio, the principal village on this part of the coast, con-
40 sists of a number of masonry houses, about eighty huts, and a fort with a white battlement; it extends along the coast, within a line of sand dunes, about 15 feet (4^m6) high. There are very few inhabitants during the hot season, but in the cool season, in 1936, the population was about 800; a considerable trade in gum and incense is carried on
45 here in the cool season. *See* view facing this page.

- A precipitous red hill, about 900 feet (274^m3) high, with a hole through its upper part, is situated close southward of Bandar Meràio. North-eastward of this village are three groups of palm trees, a man-
50 grove swamp, and the bed of a water-course, in which there are some acacia and mimosa trees.

The coast between Bandar Meràio and Capo Elefante is low and sandy. Bandar Hatra, a village about midway between Bandar Meràio and Ghersa (Galseh), a village 1½ miles north-eastward, consists of a fort, a mosque, and a few huts. The village of Ghersa consists of

Charts 6a, 1012, 597, 748b.



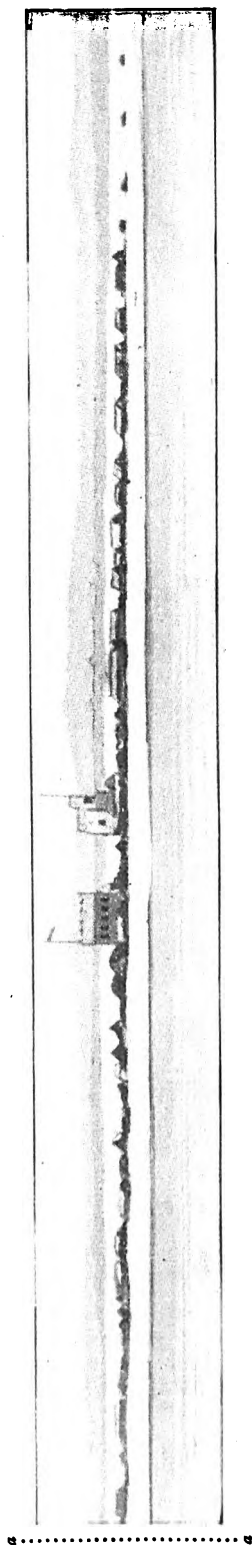
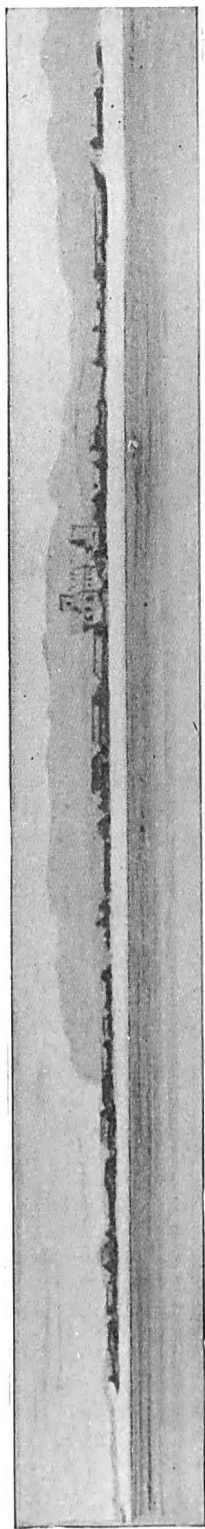
Cândala, bearing 156° , distant 8 miles.



Bandar Merão, bearing 112° , distant 8 miles.

(Originals dated 1906.)

To face page 405.



View, in two parts, of Alula from north-westward.
(Original dated 1902.)

Chart 100a.

some white masonry houses, and can be identified by two clumps of high palm trees south-south-westward of it. Ghèsselei (Gahseli), a village 2 miles north-eastward of Ghera (*Lat. 11° 43' N., Long. 50° 31' E.*), consists of some masonry houses and numerous huts; a fort and a large house in the north-eastern part of the village are conspicuous; this locality is also identified by a large group of palm trees standing on high ground and conspicuous from seaward in contrast to the barren coast.

Abo (Bandar Filúk), a village $2\frac{1}{2}$ miles north-north-eastward of Ghèsselei and on the southern side of the entrance to Khór Filùch (Filúk), consists of a conspicuous fort, some stone houses, and about sixty huts; it had a population, in 1936, of about 500. Khór Filùch has a greatest depth of 4 feet (1^m2), except at the entrance where there is a depth of 8 feet (2^m4), but it is mostly swampy and covered with mangroves; a low, narrow, sandy ridge lies between it and the sea, and a bank, with a least depth of 2 fathoms (3^m7) over it, fringes the coast in this vicinity, extending to as much as three-quarters of a mile offshore.

About $4\frac{1}{2}$ miles northward of the entrance to Khór Filùch is Punta Filùch (Filúk), low, sandy, and rounded.

Bandar Gedid, a village about $2\frac{1}{2}$ miles north-eastward of Punta Filùch, consists of a fort, two masonry houses, and about fifty huts; it stands near the coast, within a dune a few feet high.

Capo Elefante, so called from its shape, is a promontory 1,014 feet (309^m1) high, and is steep-to; its northern end forms its summit. From eastward or westward it has the appearance of an island, the land in its vicinity being low; it is conspicuous and may be sighted at a distance of 26 miles. In a valley on its eastern side lies a lagoon and the bed of a water-course.



Capo Elefante, bearing 222° , distant $21\frac{1}{2}$ miles.

(Original dated 1933.)

A beacon, 19 feet (5^m8) in height, consisting of three super-imposed square prisms, painted in white and black horizontal bands, is situated on the summit and near the north-western extremity of Capo Elefante. *Charts 671, plan of Bandar Alula anchorage; 100a.*

The coast between Capo Elefante and Ras Alula is low, rocky, and covered with sand. For a distance of 4 miles eastward of Capo Elefante and $1\frac{1}{2}$ miles westward of Alula light-tower the beach shelves gently and is reported to afford good landing.

Alula (Bandar Alula), a small town, with about 2,000 inhabitants, in 1936, situated about $1\frac{1}{2}$ miles south-westward of Ras Alula, consists of a few masonry houses and about 500 huts; there are also several ruined towers and a large cemetery near the southern end of the town. See view facing this page.

Landing here is apparently easy.

The following objects are conspicuous:—The Residency (*Lat. 11° 45' 58' N., Long. 50° 46' E.*), with its flagstaff, on a sand dune at the south-western end of the village; the two radio masts, which are

Charts 6a, 1012, 597.

Charts 671, plan of Bandar Alula anchorage; 100a.

about 120 feet (36^m6) in height, standing close north-eastward and southward of the light-tower; the fort, a white building with red stripes, surmounted by the light-tower; a white stone house, with
 5 a central tower, standing up among the huts, about 2 cables north-eastward of the fort; and a white stone house, 20 feet (6^m1) in height, with its upper part embrasured, about 8 cables south-south-westward of the fort, near which stand two palm trees.

Chart 671, plan of Bandar Alula anchorage.

- 10 There is a hospital situated about 1½ cables southward of the Residency.

The principal exports are gums, hides, ivory, pearls, and sponges; the chief imports are cotton goods, rice, sugar, and tea. The trade is mainly carried on through Aden. Vessels can communicate with

- 15 the Residency by the International Code of Signals.

There is a Radio station and a Radio beacon here; see page 25.

A light is exhibited, at an elevation of 49 feet (14^m9) from a green framework tower, situated on the western corner of the fort.

- Khor Galuen (Galweni), the narrow entrance to which lies about
 20 8 cables south-westward of Ras Alula, is a lagoon generally covered with mangrove bushes, but through which there are shallow passages; this entrance can only be used by small craft with local knowledge at high water. A new entrance was reported, in 1914, about 3½ cables south-westward of the old one. The channels leading to both entrances
 25 are crossed by two lines of rocks, awash. South-eastward of the new entrance is a small creek in which there is a line of rocks.

Charts 671, plan of Bandar Alula anchorage; 100a.

A river flows into the southern side of the lagoon, which, in the dry season, is navigable by boats for 3 or 4 miles from the entrance.

- 30 Ras Alula is low and sandy. It was reported, in 1910, to have extended about 3 cables seaward of its charted position. Within this cape the plain gradually ascends to the high range of mountains inland.

An irregular stone pyramid, surmounted by a perch, is situated about 2 miles east-south-eastward of the conspicuous fort at Alula.

- 35 *Chart 671, plan of Bandar Alula anchorage.*

A pyramidal wooden beacon, 23 feet (7^m0) in height, and painted in black and white horizontal bands, stands on Ras Alula. A light is occasionally exhibited from this beacon.

- A masonry beacon, painted in black and white horizontal bands, is
 40 situated about one cable south-westward of Ras Alula beacon.

Chart 100a.

The coast between Ras Alula and Capo Guardafui is but slightly indented, though a few rocky points project slightly, with small bays between them; a bank, with depths of less than 3 fathoms (5^m5) over
 45 it, extends, in places, to a distance of about three-quarters of a mile offshore.

Bio Addo, a village about 2½ miles east-south-eastward of Ras Alula, consists of a few huts near a clump of trees.

- Boho (Moya Bóleh), a village about 8 miles east-south-eastward of
 50 Ras Alula (*Lat.* 12° 00' N., *Long.* 50° 48' E.), consists of a few huts, with some conspicuous palm trees about half a cable from the coast.

Ras Boho is a small rounded hilly point close east-south-eastward of the village of Boho.

The approach to Boho is over a rocky bottom, and there are irregular

Charts 100a, 6a, 1012, 597.

Chart 100a.

depths of not more than $2\frac{1}{2}$ fathoms (4^m6) about $2\frac{1}{2}$ cables offshore.

Berèda (Baraida), called by the Arabs Wuregsmah, is a village about 19 miles east-south-eastward of Ras Alula, and consists of a few stone houses and about a hundred huts, scattered along the coast at the foot of the mountains; the residence of the Sultan of Mijertein is a large white fortified stone house of two stories, with a central tower on which is displayed a red flag; this house is conspicuous from seaward.

The natives are civil, but should not be trusted implicitly.

Landing at Berèda is bad, but is generally practicable westward of the village.

A few miles westward of Berèda there lies a salt water lagoon, and a short distance eastward of that village stands a rocky point, whence the coast is high and steep, leaving a narrow beach which, at low water, is used for communicating between Berèda and Oloch, 9 miles east-south-eastward. About 6 miles east-south-eastward of this rocky point the mountains turn abruptly south-westward, and farther eastward lies a slightly undulating sandy stretch of coast, on which stand the villages of Oloch and Damo.

Chart 100a, with plan of Oloch and Damo anchorages.

Oloch consists of about a hundred huts and a fort, which is not conspicuous. Picco Oloch is situated about half a mile inland south-westward of the village, and there is a sandhill, 614 feet (187^m1) high, about one mile south-eastward of the village.

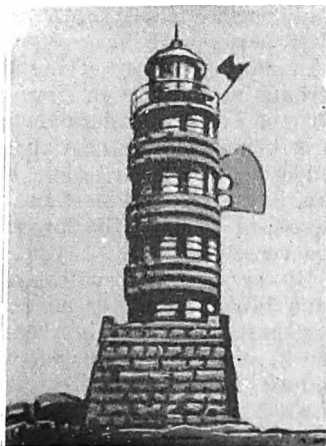
Damo, a village about $1\frac{1}{2}$ miles east-south-eastward of Oloch, consists of a stone house, about one hundred huts, and a fort, which is not conspicuous. Picco Damo is situated about 5 cables south-eastward of this village.

There is fairly good landing at either Oloch or Damo, but especially in a small bay about 4 cables eastward of Damo.

Capo Guardafui, the north-eastern extremity of Africa, is precipitous, rocky, 780 feet (237^m7) high, greyish in colour, and from south-eastward appears with a moderate slope seaward; it is steep-to. The land westward of Capo Guardafui is a level ridge. About $5\frac{1}{2}$ miles westward of the summit of the cape stands a steep bluff, the eastern extremity of a range of hills facing the northern coast and not far inland. The cape is frequently enveloped in thick haze, rendering it difficult to estimate its distance. See views on chart 6a, and view facing page 472.

From north-eastward, Capo Guardafui can be distinguished by the light-coloured sand on the top, the sandy bay westward of it, and the light-tower on its summit.

A light is exhibited, at an elevation of 864 feet (263^m3), from a circular masonry tower, 64 feet (19^m5) in height, situated on the summit of Capo Guardafui (Lat. $11^\circ 50' N.$, Long. $51^\circ 17' E.$).



Capo Guardafui lighthouse.

Charts 6a, 1012, 597.

Chart 100a, with plan of Oloch and Damo anchorages.

Caution.—The charted coastline in the vicinity of Capo Guardafui is from old and imperfect surveys; it should be regarded as approximate only, and this part of the coast should be approached with great
5 caution.

Chart 100a.

Currents.—Currents setting towards the coast have been experienced in the neighbourhood of Ras Alula. On June 3rd, 1923, s.s. *Clan Ross* reported having been set 4 miles west-south-westward in
10 lh. 40m., when steaming eastward past this point.

On 1st November, 1934, a current setting west-north-westward, at a rate of $2\frac{1}{2}$ knots, was observed between Ras Alula and Capo Guardafui, at a distance of about 5 miles offshore.

Great care is necessary in making Capo Guardafui from southward
15 during the south-west monsoon, the current setting strongly northward along the coast, closely rounding the cape and setting westward, but, at a short distance from it, continuing northward and east-north-eastward. A southerly current, with a rate of from one to 2 knots, was experienced close inshore from about 8 miles southward of Capo Guardafui to Ras
20 Hafun (page 473), in July, 1919. When the north-east monsoon has properly set in the current sets southward and westward on to the coast of Africa, with a rate rarely exceeding 2 knots. At the change of the monsoons the currents are very variable.

See pages 16-18.

25 **Rounding Capo Guardafui.—Directions.**—Many wrecks have occurred on the coast southward of Capo Guardafui (*Lat.* $11^{\circ} 50' N.$, *Long.* $51^{\circ} 17' E.$), and great caution is necessary when steering north-westward and northward towards and past this headland in the south-west monsoon, when the weather is stormy, the sea heavy, the current
30 strong, and the land generally obscured by thick haze.

A resemblance exists in the profiles of the headlands of Ras Scenaghef (Jard Hafun or Shenarif) and Capo Guardafui, about 11 miles northward, but Ras Scenaghef is 2,900 feet (883^m9) high and Capo Guardafui only 780 feet (237^m7); there is a broad and comparatively low sandy
35 plain between them.

In hazy weather, at night, the steep fall of Ras Scenaghef may perhaps be dimly seen from a vessel; when it bears less than about 270° , if Capo Guardafui is not sighted, as often happens from the haze being thickest near the sea level and the light colour of the hill
40 rendering it difficult to see, Ras Scenaghef may be mistaken for Capo Guardafui, and under these conditions the course has been altered westward towards the low shore fronting Wadi Tôhen (Tuhom) and the vessel lost.

By day there is usually a gradual change in the colour of the water
45 from blue to dark green as the land is approached; the sea also becomes smoother and the swell alters its direction to eastward of south, northward and westward of Ras Hafun, but when the land cannot be seen and identified only sounding should be relied on.

As the 100-fathom (182^m9) line runs from about 10 to 28 miles off-
50 shore between Ras Hafun and Capo Guardafui, soundings should be frequently taken when approaching the land in dark hazy weather, and the course altered to 010° or, if necessary, more eastward, immediately soundings are obtained or the land sighted. Then if the depth increases a vessel should steer northward or a little less than 360°

Charts 6a, 1012, 597.

Chart 100a.

until in depths of from 40 to 50 fathoms (73^m2 to 91^m4), and keep in these depths until the 100-fathom (182^m9) line, from about $2\frac{1}{2}$ to 5 miles northward of the parallel of latitude of Capo Guardafui, is reached, when she can alter course westward along the northern coast of Africa. The extensive banks, with a least depth of 40 fathoms (73^m2) over them, lying within a distance of 30 miles north-westward and 34 miles northward of Capo Guardafui, are left on the starboard hand. 5

The lighthouse established on Capo Guardafui, in 1924, has added 10 considerably to the safety of navigation in this vicinity.

Anchorage.—Beacons.—Directions.—Anchorage can be obtained by vessels with local knowledge in depths of 8 fathoms (14^m6), with the fort at Cândia, bearing 143° , distant $8\frac{1}{2}$ cables.

There is extensive anchorage for vessels with local knowledge, with 15 fairly good holding ground, in depths of from 6 to 8 fathoms (11^m0 to 14^m6), sand, about 6 cables off Cândia (*Lat. $11^\circ 28' N.$, Long. $49^\circ 52' E.$*); the depths decrease regularly towards the shore.

It is dangerous for vessels to remain in this roadstead when the south-west monsoon is blowing strongly. 20

There is good anchorage for vessels with local knowledge, in depths of from 6 to 10 fathoms (11^m0 to 18^m3), during offshore winds, outside the bank fringing the coast at the entrance to Khor di Botiála, about $1\frac{1}{2}$ miles from the entrance to the creek.

Khor di Botiála dries at its mouth, but small craft with local knowledge can enter at high water. 25

Small vessels with local knowledge can anchor in depths of $5\frac{1}{2}$ fathoms (10^m1), off Dürbo, at a distance of about half a mile offshore; this anchorage is frequented by dhows.

There is good anchorage for vessels with local knowledge off Bandar 30 Meràio, in depths of from 5 to 10 fathoms (9^m1 to 18^m3), sand, good holding ground, from 5 to 8 cables offshore, with the mosque bearing about 151° .

A vessel approaching Bandar Meràio should steer towards Monte Meràio (page 463), but there is a conspicuous peak 18 miles westward 35 of this mountain, which might be mistaken for it if westward of the reckoning.

The anchorages off Ghersa and Ghèsselei are reported to be bad, although the bottom is sand, with fairly good holding ground. It is also reported that there are depths of more than $5\frac{1}{2}$ fathoms (10^m1) 40 at a distance of about half a mile offshore from these villages.

It has been reported that there is good anchorage for large vessels in depths of 17 fathoms (31^m1), with the fort at Abo, bearing 144° , distant a little more than half a mile.

Anchorage can be obtained by vessels with local knowledge off Abo, 45 in depths of about 8 fathoms (14^m6), sand, with moderately good holding ground, at a distance of about half a mile offshore.

There is anchorage for vessels with local knowledge off Abo in depths of from 6 to 7 fathoms (11^m0 to 12^m8), with the fort bearing about 090° ; it is reported that the mosque and the middle of fort, farthest 50 northward of the native village, in line, lead to the anchorage. A good scope of cable is necessary to prevent dragging the anchor into deep water, to which the bank suddenly falls about 4 or 5 cables offshore. The depths are irregular, increasing suddenly from 7 to 12 and 25

Charts 6a, 1012, 597.

Chart 100a.

fathoms (12^m8 to 21^m9 and 45^m7); a vessel anchored in a depth of 7 fathoms (12^m8) found a depth of 17 fathoms (31^m1) at her stern.

There is excellent anchorage for small vessels with local knowledge 5 off the entrance to Khór Filùch, in depths of 5½ fathoms (10^m1).

On the western side of Capo Elefante a small bay, the southern shore of which is fringed by a shallow bank, affords good anchorage to small vessels with local knowledge in depths of 5 fathoms (9^m1), sheltered from easterly and southerly winds, with the beacon on Capo Elefante, 10 bearing about 074°, distant about one mile, but north-easterly winds cause a swell in the bay, with surf at its head; south-westerly winds, which blow strongly, raise a heavy sea in this bay owing to the low shore. There is a sandy beach on the southern side of the bay (*Lat.* 11° 56' N., *Long.* 50° 39' E.), from which the coast rises gradually.

Two beacons, when in line, bearing 159°, lead from north-north-westward towards this anchorage. The front beacon, consisting of a white masonry pyramid, 3 feet (0^m9) in height, surmounted by a perch, with a triangle painted white with a black vertical stripe, is situated about one cable inland from the head of the bay; the rear beacon, 20 consisting of a masonry turret, 6 feet (1^m8) in height, surmounted by a perch, with a triangle painted white with a black vertical stripe, stands on a sand dune, 2 miles south-south-eastward of the front beacon.

Chart 671, plan of Bandar Alula anchorage.

25 There is anchorage about 3 cables offshore, in depths of from 7 to 11 fathoms (12^m8 to 20^m1), sand, with either the Residency, the light-tower, or the conspicuous fort, at Alula, bearing 145°, and the beacon one cable south-westward of Ras Alula beacon, in line with that beacon, bearing about 055°.

Chart 100a.

There is good anchorage for vessels with local knowledge in depths of about 4½ fathoms (8^m2), about 4 cables north-westward of the Sultan's house at Berèda; the depths in the approach appear to be irregular, and the bottom rocky.

Chart 100a, with plan of Oloch and Damo anchorages.

Good anchorage can be obtained off the villages of Oloch and Damo in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand, good holding ground, from 5 to 6 cables offshore, well sheltered from southerly winds.

A vessel making the anchorage at Oloch should approach with the 40 fort in line with a conspicuous knob, which is situated 7 miles southward of Picco Oloch bearing about 186°.

If bound for the anchorage off Damo a vessel should approach with Picco Damo bearing 150° and open north-eastward of the village; if coming from eastward she should steer towards the village of Oloch, 45 and anchor when the fort at Damo bears 163°.

Chart 100a.

CAPO GUARDAFUI TO RAS HAFUN.—Aspect.—From Capo Guardafui the coast trends about 11 miles southward to Ras Scenaghef, and thence to a point on the coast about 19 miles south-south-westward; between this latter point and Ras Binnah (Ali Bash Kil), 50 14 miles south-south-eastward, the coast recedes forming Ghubbat Binnah (Ghubbet Binna).

From Ras Binnah the coast trends about 35 miles southward to the

Charts 100a, 6a, 1012, 597.

Chart 100a.

north-western entrance point of Khor Hordio (Hurdia); from Punta Carducci, the south-eastern entrance point of this inlet, which is the north-western point of Penisola di Hafun, the northern coast of this peninsula trends 11 miles east-south-eastward to Punta Deian (North-East cape), and thence $2\frac{1}{2}$ miles south-south-eastward to Ras Hafun. 5

Northward of Ras Scenaghef the high table land of which it is the extremity, trends about 5 miles north-westward, where there is a conspicuous knob, 1,860 feet (566^m9) high; Sharp peak (*Lat. 11° 45' N., Long. 51° 10' E.*) stands about 2 miles west-north-westward of this knob, with a deep ravine between them. Between Sharp peak and Capo Guardafui the hills recede still farther from the coast, the land between being undulating light-coloured ground resembling coarse sand, rising in a gradual slope from the coast. This receding of the high land, combined with the light colour of the slope between it and Capo Guardafui, causes difficulty in making out any land northward of Ras Scenaghef at night, which has led to many disasters. See views on chart 6a. 10 15

Picco Quoin, 11 miles south-westward of Ras Scenaghef and 3 miles inland, is conspicuous from southward owing to the sudden fall of its eastern end. There is a rounded sandhill near the coast about 17 miles south-south-westward of Ras Scenaghef, with a large tract of sand extending northward of it, and well-detached from the mountains farther inland; this is also a good mark, being the only white sand in the locality. From Ras Scenaghef, Monti Gural (Jebel Guraleh), which comprises Picco Quoin, extend south-westward. 25

Outlying banks.—A bank, with a depth of 38 fathoms (69^m5) over it, was reported, in 1924, to lie about 24 miles south-eastward of Ras Scenaghef.

Chart 6a.

Banks, with depths of from 14 to 16 fathoms (25^m6 to 29^m3) over them, were reported, in 1937, to lie within a distance of 34 miles east-south-eastward of Ras Binnah. 30

Chart 100a.

Coast.—Dangers.—Radio beacon.—Radio direction finding station.—The coast, from Capo Guardafui as far southward as Wadi Tòhen, a distance of about 6 miles, is sandy, except for a small cliff about midway; Wadi Tòhen is a fertile valley, full of large mimosa trees, with a stream running through it. 35

Tòhen, a village situated on the left bank and near the entrance to the stream running through Wadi Tòhen, consists of a dozen masonry houses, three mosques, and about a hundred huts; it is conspicuous from seaward. Landing can be effected here. 40

A Radio beacon is in operation from a Radio direction-finding station, situated close southward of Tòhen. 45

A cliff, about 160 feet (48^m8) high, extends nearly one mile southward from the entrance to the stream mentioned above, whence the coast is sandy to Ras Scenaghef.

Ras Scenaghef is the north-eastern extremity of Monti Gural, and the bluff termination of a tableland 2,900 feet (883^m9) high; this tableland on its seaward side falls precipitously for about 400 feet (121^m9) and immediately over the cape the ground from the base of the precipice is much broken in its slope to the sea, and deeply scored with rocks. The cape, which is steep-to, is rounded, rocky, and steep; it appears as 50

Charts 6a, 1012, 597, 748b.

Chart 100a.

a remarkably bold and rugged headland, especially from south-eastward (*see* view facing this page). The land about it and to southward is dark, contrasting greatly with the whitish-greyish colour of that
5 between it and Capo Guardafui.

Wadi Abdehan (Khor Abdihan) is a lagoon close to the coast 12 miles south-westward of Ras Scenaghef (*Lat.* $11^{\circ} 40' N.$, *Long.* $51^{\circ} 16' E.$); just southward of this lagoon lies the small village of Egadur.

The coast, on the western side of Ghubbat Binnah, consists of a
10 plain, covered with bushes, which rises, about 4 miles inland, in steep precipices intersected by fertile valleys, conspicuous amongst which is Wadi Ereiròd (Dabani), to a flat limestone range, about 2,700 feet (823^m0) high; Wadi Ereiròd flows into the sea, about 13 miles south-south-westward of Wadi Abdehan. The south-western side of Ghubbat
15 Binnah is low, sandy, and covered with bushes.

Several villages with forts stand on the shores of Ghubbat Binnah.

Wadi Gorgorià is situated about 9 miles south-south-westward of Wadi Abdehan.

Bargàl, a village standing on the right bank of Wadi Ereiròd, consists of about fifty huts, the ruins of several stone houses, and the old residence of the Sultan. Landing can be effected in a small bay here in fine weather.

Northward and westward of Bargàl are many conspicuous oases of date palms.

25 This village can be identified by a steep bluff at the mouth of Wadi Ereiròd.

Ereiròd, a village about one mile southward of Bargàl, is in ruins.

On the coast between the villages of Bargàl and Ereiròd are the ruins of a red tower, which appears like an old tomb, and assists in
30 identifying this locality.

Danali, a village about one mile southward of Ereiròd, and Bandar Nuhur, a village about 2 miles farther southward, are in ruins.

Gondoli is the name of the locality about $4\frac{1}{2}$ miles westward of Ras Binnah; the village of that name, which formerly stood here, no longer
35 exists.

Khor Binnah (Binna), a lagoon, lies close south-eastward of Villaggio di Gondoli.

Binnah (Binna), a village near the coast, about 2 miles westward of Ras Binnah, consists of a few huts.

40 Ras Binnah (*see* view facing page 473) is a steep cliff at the eastern end of a promontory, which extends north-eastward; from northward it has the appearance of being an island. Ras Binnah is steep-to.

Landing, off the villages northward of Ras Binnah, can be effected without difficulty between an hour before and two hours after sunrise.

45 The coast between Ras Binnah and the north-western entrance point of Khor Hordio, is low, sandy, thickly covered with bushes, and backed by a range of flat tableland, from 500 to 800 feet (152^m4 to 243^m8) high, which extends about 30 miles southward from Ras Binnah, its southern end being about 5 miles inland.

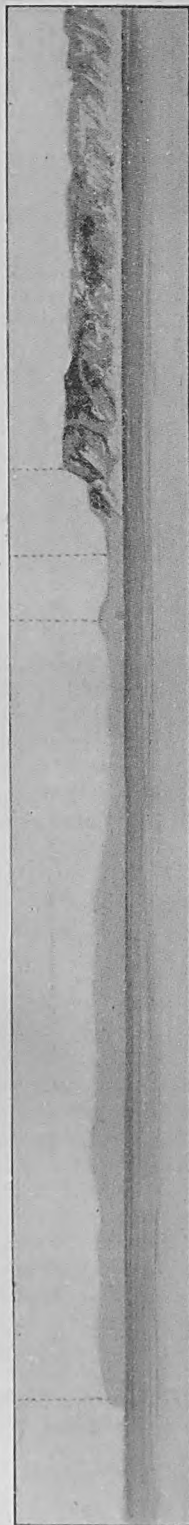
50 About 10 miles south-south-westward of Ras Binnah lies Wadi Ghibirti (Jembelhudi or Jambókh), a valley, full of bushes, which runs through the tableland described above.

Surat (Dehgubo) is situated near the coast about 12 miles southward of Wadi Ghibirti, and about 8 miles farther southward is Wadi Hànda,



(a)

Capo Guardafui, bearing 120°, distant 9 miles.
Lt. Ho. (not shown).
(Original dated prior to 1921.)



(b)

Capo Guardafui, from north-westward, distant 10 miles.
Sandhill. Oloch. Sleep bluff.
(Original dated 1902.)



(c)

Capo Guardafui, from northward, distant 8 miles.
Lt. Ho. (not shown).
Ras Scenaghef.
(Original dated 1902.)

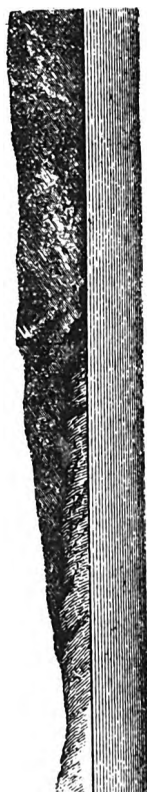


(d)

Four views of Capo Guardafui.
(Original dated prior to 1921.)

Capo Guardafui, bearing 280°, distant 2 miles.
Lt. Ho. (not shown).

To face page 473.



Ras Binnah, bearing 296° , distant 20 miles.

(Original dated prior to 1921.)



Ras Hafun, bearing 180° , distant 5 miles.

(Original dated 1900.)

Chart 100a.

with a lagoon of the same name close to the coast. Close to this lagoon is a village, partly in ruins, bearing the same name; the ruins of a large square stone house or fort in this village (*Lat.* $10^{\circ} 40' N.$, *Long.* $51^{\circ} 10' E.$) stands on the coast, the dark brown colour of its walls rendering it conspicuous against the white background. 5

Baia di Hordio (Hafun North bay), northward of Penisola di Hafun, is free from dangers, with the exception of two shoals, one with a depth of $2\frac{1}{4}$ fathoms (4^m1) and another with a depth of 2 fathoms (3^m7), lying about $2\frac{1}{4}$ miles east-north-eastward and 2 miles eastward, 10 respectively, of Punta Carducci; this bay affords shelter from the south-west monsoon.

Khor Hordio is only available for boats; the bottom is sand and rocks. Some rocks, with depths of less than 6 feet (1^m8) over them, lie in the entrance to this inlet. It was reported, in 1936, that the 15 mouth of Khor Hordio was slowly silting up.

The village of Hordio (Hurdia), situated on the north-western shore of Khor Hordio, about 2 miles westward of its north-western entrance point, had a population, in 1936, of about 1,200. It consists of some masonry houses and numerous huts. There is a post-office here. 20 There is regular steamer communication with Eritrea, Libia, and Italy, and occasional steamer communication with other African ports.

The principal exports are salt, ambergris, gum, tortoise-shell, hides, and ostrich feathers.

Penisola di Hafun rises in steep cliffs from the sea, and is formed of 25 sandstone and limestone; Ras Hafun, its eastern extremity, is flat, and its interior consists of undulating hills intersected by deep ravines and watercourses. There is a conspicuous dark bluff about 3 miles southward of Punta Carducci. Punta Dentino (Barn hill), the south-western point of the peninsula, is high and flat; from a distance it appears separated from the rest of the peninsula, the intervening land 30 being low. See view facing this page.

Penisola di Hafun is connected with the mainland by a narrow isthmus of white sand, shells, and mud, with a few stunted bushes on it; this peninsula, especially from northward or southward, has the 35 appearance of being a large detached island, as the adjacent coast is low.

Winds.—A dangerous surf is experienced on the shores of Ghubbat Binnah when the north-east monsoon blows home. This wind resembles a land and sea breeze, beginning from north-eastward about 0900 40 and blowing strong until about 2200, when it becomes light from westward; in the early hours of the morning it is light from north-north-westward and gradually veers north-eastward, whence it blows strong about 0900. Landing can be effected easily between one hour before and 2 hours after sunrise. 45

Light.—A light is exhibited, at an elevation of 351 feet (107^m0), from an iron framework structure on a hut, 42 feet (12^m8) in height, situated on Ras Hafun.

Anchorage.—**Lights.**—**Beacons.**—Anchorage can be obtained in depths of 10 fathoms (18^m3), sand, north-eastward of the Radio direction-finding station at the mouth of Wadi Tòhen and about one mile offshore. 50

Vessels with local knowledge can obtain anchorage in depths of $6\frac{1}{2}$ fathoms (11^m9) about 4 cables offshore, off Bargal (*Lat.* $11^{\circ} 17' N.$,

Chart 100a.

Long. 51° 06' E.), but this anchorage is open to both monsoons, and the holding ground of stones is poor.

Vessels with local knowledge can obtain anchorage off Ereiròd in depths of 9 fathoms (16^m5), sand, with Ras Binnah bearing 151° and the ruins of the village about 262°; the holding ground is not good, and the depths decrease rapidly towards the shore.

The anchorage off Gondoli is the best anchorage in Ghubbat Binnah, and vessels with local knowledge can obtain anchorage here in depths of not less than 7 fathoms (12^m8), sheltered from southerly winds; it is not often subject to heavy squalls from the high land, but squalls from south-westward are probably not uncommon from June to September.

There is anchorage for vessels with local knowledge in Baia di Hordio during the south-west monsoon, in depths of from 7 to 10 fathoms (12^m8 to 18^m3), hard sand; the holding ground though good in some places is bad in others, where many vessels have dragged their anchors during strong southerly winds.

Four beacons, from each of which a light is occasionally exhibited, consist of truncated pyramids painted in white and black horizontal bands, the alignments of which indicate the usual anchorage. The front beacon of the north-western pair is situated about one cable from the north-eastern coast of Penisola di Hafun and 2½ miles south-eastward of Punta Carducci, and the rear beacon about 9½ cables west-north-westward of the front beacon; the front beacon of the south-eastern pair stands about 1½ cables from the coast and 1½ miles south-eastward of the front beacon of the north-western pair, and the rear beacon about 2 cables south-westward of the former beacon.

A large white house, with a tall mast close to it, stands about 4½ cables north-westward of the front beacon of the north-western pair.

The best anchorage in Baia di Hordio is in depths of from 4½ to 5 fathoms (8^m2 to 9^m1), with the north-western pair of beacons in line, bearing 286°, and the south-eastern pair in line, bearing 229°.

The anchorages in Baia di Hordio are sheltered from southerly winds, but during the full strength of the south-west monsoon a heavy swell sets into it round Ras Hafun, and violent squalls blow across the promontory.

A light railway connects Punta Carducci with Dante, 7½ miles south-eastward.

An artificial harbour, formed by two small moles, is situated on the north-western side of the entrance to Khor Hordio, southward of the village, and affords shelter to small craft with local knowledge; it is much frequented by dhows.

Note.—The east coast of Africa, southward of Ras Hafun (*Lat. 10° 26' N., Long. 51° 25' E.*), is described in *Africa Pilot*, Part III.

Charts 6a, 1012, 597.

CHAPTER XI

ISLANDS LYING EASTWARD OF CAPO GUARDAFUI

Chart 6a.

ABD-AL-KURI.—Aspect.—Abd-al-Kuri, an island, the western extremity of which lies about 52 miles east-north-eastward of Capo Guardafui, is hilly. Two ranges run through the length of the island but these being separated in the middle give, from a distance north-ward and southward, the appearance of two islands; the western range is 882 feet (268^m8) high, while the eastern attains an elevation of 2,025 feet (617^m2). The northern coast of this island consists chiefly of a sandy beach, with a few rocky points; the southern coast is composed of abrupt cliffs. It is not cultivated and, in 1930, it was reported that the southern side of the island appeared barren and desolate.

In 1942, the island had about 150 inhabitants. Communication with this island is cut off during the south-west monsoon.

Currents.—Tidal streams.—During the survey of this locality by H.M.S. *Fawn*, in May, 1877, the current set east-north-eastward at rates of from half a knot to 1½ knots, with numerous tide rips in the vicinity of shoal water.

In December, 1919, when the north-east monsoon was well established, H.M.S. *Odin* experienced a north-north-westerly current, with a rate of one knot, between Capo Guardafui and Abd-al-Kuri. See pages 16-18.

Through all the passages between the islands westward of Socotra, the tidal streams set northward during the rising tide and southward during the falling tide, but they are much influenced by the current due to the prevailing monsoon; when not so influenced, their rate is reported to be from one to 2½ knots.

Caution.—Owing to the higher hills being some distance inland from the western extremity of Abd-al-Kuri, it is difficult to estimate the distance off that point correctly. This fact should be borne in mind, especially at night, when, to ensure passing at a distance of not less than 2 miles off it, a vessel should not approach into a less depth than 50 fathoms (91^m4).

Off-lying bank and islets.—A coral bank, with a least depth of 24 fathoms (43^m9) over it, lies about 8 miles west-north-westward of the western extremity of Abd-al-Kuri (*Lat.* 12° 14' N., *Long.* 52° 04' E.).

Kal Farun, or Kaal Firaon, two rocky islets about 12 miles north-

Charts 1012, 597, 748b.

Chart 6a.

ward of the western part of Abd-al-Kuri, lie on the northern part of a bank, with a least depth of 7 fathoms (12^m8) over it; they are steep-to, and are separated from each other by a narrow channel, in which lie many sunken rocks. The eastern and larger islet has one peak, 282 feet (85^m9) high, and two smaller ones; the western islet also has one peak of about the same elevation, and one smaller peak, so that from different directions they show several peaks, all completely covered with guano. These islets are difficult to distinguish at night owing to their colour.



Kal Farun, bearing 292°, distant 9 miles.

(Original dated prior to 1921.)

Northern coast.—Dangers.—Anchorage.—Ras Khaisat en naum, the western extremity of Abd-al-Kuri, consists of two sharp rocky points, 5 cables apart; a rocky spit, with depths of 2 fathoms (3^m7) over it, extends about 1½ miles westward of the northern of these points.

From Ras Khaisat en naum the coast trends about 7 miles eastward to Ras Haimera, which is small and rocky, and thence the coast, which consists of small rocky points, with sandy beaches between them, trends about 6 miles eastward to Ras Teram.

A sunken rock lies close offshore, about 2 miles eastward of Ras Haimera, and a spit, with depths of 3 fathoms (5^m5) over it, extends about three-quarters of a mile northward from the coast close to this sunken rock.

Between Ras Teram and Ras Anjara, the north-eastern extremity of Abd-al-Kuri, about 7 miles eastward, the coast, which is low and sandy, forms Bandar Lon, a bight on the shore of which are a few huts; some sunken rocks lie close off the shore in this vicinity. Ras Anjara is rocky, with a sand hill.

The anchorage off the northern side of Abd-al-Kuri is reported to be indifferent but, in the month of August, anchorage in a depth of 9 fathoms (16^m5), sand, good holding ground, has been obtained, with Ras Haimera bearing 136°.

Eastern coast.—Dangers.—Between Ras Anjara and the south-eastern extremity of the island, about 2½ miles south-south-westward, is a bay, with a sandy beach.

Bacchus bank, lying about 1½ miles east-north-eastward of Ras Anjara, has a least depth of 4 fathoms (7^m3) over it; the wind against the tidal stream causes a big ripple over this bank.

An above-water rock lies about a mile south-westward of Ras Anjara.

The south-eastern extremity of Abd-al-Kuri is low and rocky; the mountain range rises in a slope from it. Close off this point lie three small rocks, above water.

Southern coast.—Dangers.—Anchorage.—From Ras Khaisat en naum (*Lat.* 12° 14' N., *Long.* 52° 04' E.) the coast, which is steep-to, trends about 3 miles east-south-eastward to Ras Hattan, a bluff, and thence 4½ miles eastward to the western entrance point of Bandar Saleh.

About 2 miles westward of the western entrance point of Bandar Saleh a rocky islet lies close to the coast, and inside this islet is a cove encumbered with sunken rocks.

Charts 1012, 597, 748b.

Chart 6a.

Bandar Saleh is an indentation in the coast between the two ranges described on page 475 ; northward of this bay are moderately high sandhills. H.M.S. *Penzance* reported, in 1933, that the western part of the bay appeared to be encumbered with shoals. 5

Between Ras Labaineh, the eastern entrance point of Bandar Saleh, and the south-eastern extremity of the island, about 9 miles eastward, the coast consists of steep cliffs and is steep-to.

There is good anchorage, during the north-east monsoon, in depths of from 6 to 10 fathoms (11^m0 to 18^m3), coral, from 2½ to 5 cables 10 offshore, in Bandar Saleh.

THE BROTHERS.—The Brothers, lying 35 miles eastward of Abd-al-Kuri, consist of two islands, Jazirat Samha and Jazirat Darsa. They lie on an extensive bank, which connects them with the island of Socotra, the south-western point of which is situated 19 miles north- 15 eastward of Jazirat Darsa ; this bank extends about 35 miles eastward and southward of them, and probably farther, but the locality has not been thoroughly examined.

The passage between Abd-al-Kuri and Jazirat Samha is, with the exception of Bacchus bank (page 476), free from dangers. 20

Jazirat Samha (*see* views facing page 480) rises to a small hill near its western extremity, and to a table-topped mountain which extends nearly half the length of the island, the summit of which, situated near the centre of the island and towards its southern coast, attains an elevation of 2,537 feet (773^m3) ; the northern extremity of this moun- 25 tain is a well defined bluff. The coasts of this island are rocky, and on its southern side cliffs rise vertically from the sea.

A reef, with depths of less than 6 feet (1^m8) over it, extends about 5 cables westward of the western extremity of Jazirat Samha, and a reef, which dries, fringes this island, in places. Two rocks, above 30 water, lie about 4 cables off its south-eastern side, and a bank, with a depth of 13 fathoms (23^m8) over it, lies about 1½ miles eastward of its north-eastern extremity.

The passage between Jazirat Samha and Jazirat Darsa is 9 miles wide and free from dangers. 35

Jazirat Darsa (*see* views facing page 480) rises vertically from the sea to an even table-shaped summit, except the northern point, which projects about 3½ cables from the foot of the mountain. It lies on a bank, with depths of from 3 to 20 fathoms (5^m5 to 36^m6) over it, which extends about 2 miles north-eastward and 3½ miles southward of the 40 island.

Charts 5, 6a. 295d

SOCOTRA.—Socotra, the western extremity of which, Ras Shoab (*Lat.* 12° 32' N., *Long.* 53° 18' E.), is situated 126 miles east-north-eastward of Capo Guardafui, was formerly governed by the Sultan 45 of the Mahrah tribe (page 401), and was placed under British protection, in 1886, by treaty with that Sultan ; this island is attached to the Aden Protectorate.

Situated near the track of vessels bound to and from the East, Socotra is generally sighted by vessels entering or leaving the Gulf 50 of Aden, but being exposed to both monsoons, and having no harbours in which vessels can at all times anchor with safety, coupled with

Charts 1012, 597, 748b.

R

Charts 5, 6a.

the unfavourable character the natives have hitherto borne, it is but little visited.

Chart 5.

- 6 In December and January, inclusive, north-north-easterly winds prevail and blow in violent gusts for several days at a time, so the northern side of the island should then be given a wide berth.

On the northern coast of Socotra, during June, July, and August, the 10 south-west monsoon, according to native report, blows in hard and violent gusts, whilst on the southern coast it is steadier and not so strong, but there is a very heavy surf; rain falls occasionally.

Jabal Haggier, about 30 miles westward of the eastern extremity of the island and $3\frac{1}{2}$ miles from the northern coast, is the summit 15 of Socotra.

The south-western part of this island is arid and barren, but much of the remainder is comparatively fertile, being well-watered by the monsoon rains of July and December.

The southern coast preserves a nearly unbroken line, but the northern 20 and western coasts are broken into a succession of small bays, generally with streams at their head, affording anchorage according to the seasons but none of them is safe at all times of the year. Over a broad area hills rise abruptly in vertical cliffs several hundred feet high, but at other places there are plains, which attain a breadth of as much as 25 5 miles between the base of the hills and the coast. On the southern side is the plain of Naukad, the largest plain which, extending nearly the whole length of the island, is for miles covered with dunes of drift sand; on the northern side, these plains occur chiefly at the mouth of streams, and are the sites of the only places which may be called 30 towns.

The internal part of the island may be roughly described as broad, undulating, and intersected by limestone plateaux, with an average elevation of 1,000 feet (304^m8), that flank westward, southward, and eastward, a nucleus of granite peaks, which attain elevations of over 35 4,000 feet ($1,219^m2$). These are seldom free from cloud, but when the weather is clear their appearance is broken and picturesque. The whole of this hilly region is deeply intersected by ravines and valleys, which, in the rainy seasons, are occupied by roaring torrents, but the majority are empty in the dry seasons; there are, however, many 40 perennial streams, especially in the central regions, though but few reach the coast in the dry season.

There are several valleys in the plain between Jabal Haggier (*Lat.* $12^\circ 34' N.$, *Long.* $53^\circ 59' E.$) and the northern coast; in the valleys through which the streams flow are extensive groves of date trees 45 and some cultivated areas.

The inhabitants may be divided into two different classes, i.e., the Bedāwin, who inhabit the mountains and the high land near the western end of the island, and who are probably the aborigines, and those who reside in the coastal villages and the eastern end of the 50 island; the latter are a mixed population, the descendants of various races. The population was estimated, in 1942, at about 5,000. Their religion, at one time Christian, has been Muhammadan since the end of the 17th century.

Though Arabic is spoken by merchants when transacting business

Charts 6a, 1012, 597, 748b.

Chart 5.

with traders visiting the island, there is a language peculiar to it in general use among its inhabitants.

Climate.—Though Socotra is not very far from the African continent nor from Arabia, yet, from both monsoons blowing over a large expanse of water, it enjoys a remarkably temperate and cool climate as compared with either of them. The climate on the hills is very healthy, but on the plains, especially at the change of the monsoons, fever is prevalent.

Currents.—The currents close around the island are influenced by the tidal streams and winds, generally setting with the wind after it has blown hard from the same direction for some time. H.M.S. *Odin*, in December, 1919, when the north-east monsoon was well-established, experienced a north-westerly current with a rate of $2\frac{1}{2}$ knots between Ras Shoab and a position about a mile offshore 3 miles south-south-westward of Deairi, a village about 21 miles west-south-westward of the eastern extremity of Socotra. See also pages 16-18.

Tidal streams.—The tidal streams are very irregular, sometimes running in one direction for 16 hours, at other times only 6 hours, depending in great measure on the strength and direction of the wind. The stream during the rising tide sets westward on the southern side of the island and eastward on its northern side; during the falling tide it sets in the opposite directions. The rate of the east-going stream on the southern side of the island is about one knot, but it depends greatly on the wind.

Winds and weather.—See pages 44-47.

Products.—Ghi is the chief product of Socotra. Gum and resin-producing plants are numerous; the island is but little cultivated.

The only wild animal is the civet cat. Scorpions, centipedes, and a large and venomous description of spider, called *nargub* by the Arabs, are common on the low parts of the island.

Trade.—The trade of the island (*Lat. 12° 39' N., Long. 54° 00' E.*) is small, ghi and aloes being the chief articles of export. It is carried on by bagalas from the Arabian coast. These arrive in January with coffee, rice, and other articles, which they exchange for ghi, aloes, orchilla weed, etc., which they take to Zanzibar, bringing back coconuts, bombé, and piece-goods. They dispose of as much of these as possible, returning to Arabia with aloes, dragon's blood, blankets, etc. Rupees are taken in payment for goods supplied, but barter in kind is usually preferred.

Anchorage.—Excepting a few headlands, from which reefs project, the coasts of the island are bold, with moderate depths for some distance offshore in places. There are several anchorages, which afford protection according to the prevailing monsoon, but, as already stated, none affording shelter at all times.

The southern side, having but few inhabitants and very little water, is seldom visited, but the anchorage is good. Ghubbat Kallansiya and Ghubbat Shoab, on the north-western side, Ghubbat Neh on the south-western side, and Bandar Arasal at the eastern end of the southern side, afford good anchorage during the north-east monsoon.

The northern side of the island is also considered safe in the north-east monsoon from about February, when it is nearing its end. During the south-west monsoon, there is fair anchorage in all the bays in the

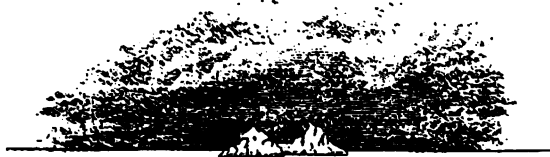
Chart 5.

northern coast eastward of Ras Kadarma, a point about 21 miles east-north-eastward of Ras Shoab; Bandar Delaisha, about 29 miles eastward of the former point, is much the best in the strength of that monsoon. Tamrida bay, about 4 miles westward of Bandar Delaisha, is said to be more exposed to the violent squalls from the hills and to the swell, but it affords good shelter with the wind well off the land. These anchorages are usually on a narrow bank of sand or rock, sloping rapidly to deep water.

10 From February to May is the fine weather season, when the anchorages on the northern coast are considered safe.

Chart 6a.

NORTH-WESTERN SIDE.—**Off-lying islet.**—Jazirat Sabuniya, lying 11 miles north-westward of Ras Shoab, consists of three granite peaks. It is white and, from a distance, resembles two vessels under sail; from northward it presents a wedge-shaped appearance. The passage between it and Socotra is deep and free from dangers.



Jazirat Sabuniya, bearing 013°, distant 5 miles.

(Original dated prior to 1921.)

Chart 5.

Coast.—Dangers.—Ras Shoab (*Lat. 12° 32' N., Long. 53° 18' E.*), which is steep-to on its western and south-western sides, rises 2½ miles inland to Jabal Shoab; a reef fringes the north-western side of this cape, extending to as much as 2 cables offshore. See view facing page 481.

Caution is necessary when making Ras Shoab, as H.M.S. *Odin*, in December, 1919, during the north-east monsoon, found it obscured about sunset by heavy rain squalls; it is probably even more obscured during the south-west monsoon.

Between Ras Shoab and Ras Baduwa, about 8 miles north-eastward, the coast forms Ghubbat Shoab, which is quite exposed to the wind during the south-west monsoon, but which affords good shelter, with smooth water during the north-east monsoon, though at times strong squalls are experienced. There are no known dangers, and the bottom is generally sand or rock.

Within the coast, about 5½ miles east-north-eastward of Ras Shoab, lies a salt water lagoon, which rises and falls with the tide, although it has no perceptible communication with the sea, from which it is separated by a bank of sand about 3 cables wide; there are mangroves on its banks.

Ras Baduwa is a bluff and forms the western extremity of Jabal Mali; it is steep-to.

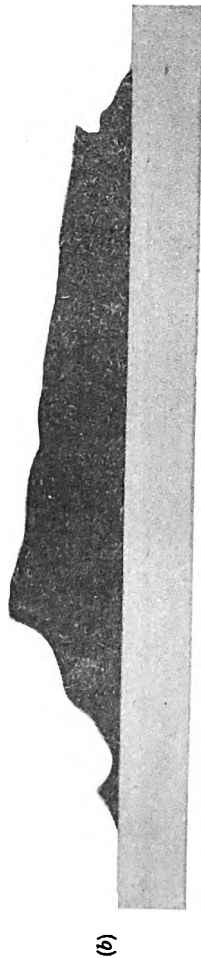
Chart 5, with plan of Ghubbat Kallansiya.

From Ras Baduwa the coast trends about 3 miles east-north-eastward to the south-western entrance point of Ghubbat Kallansiya;

Charts 6a, 1012, 597, 748b.



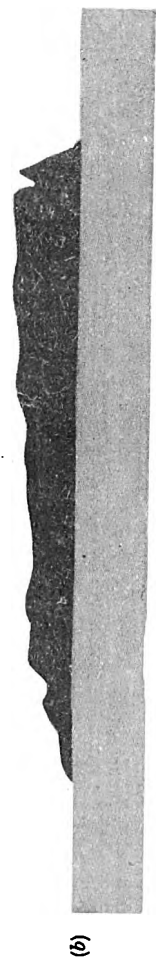
*Jazirat Samha from about 4 miles north-north-eastward.
(Original dated prior to 1921.)*



*Jazirat Samha, bearing 075°, distant 20 miles.
Two views of Jazirat Samha.
(Original dated prior to 1890.)*



*Jazirat Darsa from about 4 miles north-north-westward.
(Original dated prior to 1921.)*



*Jazirat Darsa, bearing about 080°, distant 20 miles.
Two views of Jazirat Darsa.
(Original dated prior to 1890.)*



Ghubbat Shoab.

Ras Shoab, bearing 090°.
Western end of Socotra.



*Ras Radress,
bearing 230°,
distant 5 miles.*

Eastern end of Socotra.
(*Originals dated prior to 1908.*)

Chart 5, with plan of Ghubbet Kallansiya.

this bight, which is entered between this latter point and Ras Kallansiya, about $3\frac{1}{2}$ miles east-north-eastward, affords shelter during the north-east monsoon.

Chart 5, plan of Ghubbet Kallansiya.

5

The shores of Ghubbat Kallansiya are fringed by a reef, most of which dries, and extends to as much as 2 cables offshore; the depths in this bight are irregular, with overfalls.

A village and mosque are situated close to the coast, in a grove of date and coconut trees, 6 cables southward of Ras Kallansiya and close northward of a lake.

Ras Kallansiya rises to four small granite peaks, by which it may be identified, as well as by the hills near them being covered, in places, with sand.

Between Ras Kallansiya and Ras Samari, $2\frac{1}{2}$ miles east-north-eastward, the coast forms an indentation which is filled by a sandbank with a mangrove swamp in the middle of it; this sandbank, nearly all of which dries, extends to as much as 9 cables offshore.

Chart 5.

From Ras Samari the coast trends $1\frac{1}{2}$ miles eastward to Ras Bashuri, the northern extremity of the island; off the latter point, and connected with it by a narrow neck of land, 50 yards (45^m7) long, stands a pyramidal rock. Mountains rise, in places, almost vertically from this part of the coast, which is fronted by a rocky beach; part of the mountain-side is covered with sand.

25

Anchorage.—The best anchorage in Ghubbat Shoab (*Lat.* $12^\circ 36'$ N., *Long.* $53^\circ 23'$ E.), with smooth water, during north-easterly winds, is, in a depth of 10 fathoms (18^m3), white sand, about 7 cables offshore, with Ras Baduwa bearing 010° and Ras Shoab 241° . This position is off some mangrove trees standing northward of the salt-water lagoon.

Chart 5, plan of Ghubbet Kallansiya.

The best anchorage in Ghubbat Kallansiya for a small vessel is, in a depth of 4 fathoms (7^m3), about 4 cables off the sandy beach, which is the best landing place, with the northern granite peak of Ras Kallansiya bearing 062° and the mosque 124° . Large vessels may anchor, in depths of from 7 to 10 fathoms (12^m8 to 18^m3), with the mosque, bearing 135° , distant about a mile.

This anchorage is exposed during the south-west monsoon.

Chart 5.

NORTHERN SIDE.—Ras Bashuri to Ras Hekab.—Aspect.—From Ras Bashuri the coast trends $4\frac{1}{2}$ miles eastward to Ras Kadarma.

Between Ras Kadarma and Ras Karma, $13\frac{1}{2}$ miles east-south-eastward, the coast, which is low and sandy, recedes, forming Ghubbat Karma; it is backed by a range of mountains, with an opening near the middle, and another pass through it southward of Ras Kadarma.

45

Chart 5, with plan of Tamrida or Hadibo bay.

From Ras Karma the coast trends $1\frac{1}{2}$ miles east-north-eastward to Ras Taab; between this latter point and Ras Hebak, about 4 miles eastward, the coast recedes slightly, forming Ghubbat Kadhup.

Chart 5.

50

Coast.—Dangers.—~~Bay~~**—**Ras Kadarma is a low point, with the termination of a high bluff close within it.

Khor Hadjun, about 9 miles south-eastward of Ras Kadarma, is

Charts 5, 6a, 1012, 597.

Chart 5.

a salt water lagoon, with its entrance blocked, lying just within the coast; it is bounded by moderately high cliffs.

Ras Karma is a low sandy point fringed by a reef which extends to 5 a distance of 2 cables offshore.

The coast between Ras Karma and Ras Taab is fringed by a reef which extends to as far as $2\frac{1}{2}$ cables offshore; ~~a buoy is moored on the northern edge of this reef, about 6 cables westward of Ras Taab.~~

Chart 5, plan of Tamrida or Hadibo bay.

10 A reef, extending to as far as $1\frac{1}{2}$ cables offshore, fringes the coast for a distance of about 3 miles east-south-eastward of Ras Taab.

Three small villages, Kadhup, Mouri, and Kathub, each with about 50 inhabitants, stand on the shore of Ghubbat Kadhup; there is a mosque in the first-named village. A creek leads to Mouri, which is

15 about 4 cables inland, with a swamp eastward of it.

Ras Hebak is bold, vertical, and rocky.

4.8 mi off the coast. A depth of 20 fm in 1949 9 mi NNE of Ras Taab

Anchorage.—The best anchorage in Ghubbat Karma is in depths of 5 or 6 fathoms (9^m or 11^m), sand and coral, a little more than half 20 a mile offshore, with Ras Karma, bearing about 055° , distant $1\frac{1}{2}$ miles. During the south-west monsoon a heavy swell is felt when the wind is well westward. During the north-east monsoon there is a considerable swell in the western part of this bay (*Lat. $12^\circ 39' N.$, Long. $53^\circ 41' E.$*).

Chart 5, plan of Tamrida or Hadibo bay.

25 Ghubbat Kadhup affords anchorage during the south-west monsoon.

Tamrida bay.—Tamrida bay is entered between Ras Hebak and Ras Haulaf, about 7 miles east-north-eastward; it is free from dangers.

Ras Haulaf is fringed by a reef on its western side, extending to as far as one cable offshore.

30 The town of Tamrida or Hadibo lies about $2\frac{1}{2}$ miles eastward of Ras Hebak, and the villages of Hernout, Deshelenata, and Suk lie eastward of Tamrida, and between it and Jabal Omhari, a sloping sandhill, 3 miles east-north-eastward of the town. A village, with two conspicuous white houses and a mosque, lies a mile southward of Ras

35 Haulaf. Three streams from the mountains flow into this bay.

Chart 5, with plan of Tamrida or Hadibo bay.

Aspect.—The position of Tamrida may be identified from seaward by the high craggy peaks of the mountain range, of which Jabal Haggier (page 478) is the summit, that backs the plain on which it stands, or, if 40 these peaks are obscured, by Jabal Omhari, which from a distance of from 10 to 12 miles, when bearing south-eastward, appears like a white cliff sloping southward; also by Ras Haulaf, the low eastern entrance point of the bay, which is the north-western extremity of a low rounded projection, which rises gradually inland, and consists 45 chiefly of undulating sandhills covered with prickly bush; the coast of this projection consists of small rocky points, with sandy beaches between them.

Chart 5, plan of Tamrida or Hadibo bay.

Anchorage.—During the south-west monsoon the anchorage in 50 Tamrida bay is exposed to strong squalls from the mountains, and a heavy swell sets in when the wind is well westward, rendering good ground tackle necessary; the holding-ground of sand and stones, with patches of mud, is fair. It appears to be a desirable anchorage for a few days for small vessels proceeding eastward, instead of returning

Chart 5, plan of Tamrida or Hadibo bay.

to Aden when the south-west monsoon is unusually violent, particularly if the wind is well southward, when the sea is comparatively smooth.

A good berth is in a depth of 9 fathoms (16^m5), with Ras Haulaf bearing 067° and the large square house in the town about 175°. 5

In 1936, H.M.S. *Defender* anchored, in a depth of 5 fathoms (9^m1), with the mosque at Tamrida, bearing 180°, distant 5½ cables; she reported that the depths in the vicinity were greater than are shown on the chart. 10

There is good shelter close under Ras Haulaf, in depths of from 5 to 6 fathoms (9^m1 to 11^m0), from all winds eastward of north-east, with comparatively easy landing, whilst the sea may be breaking off the town.

The bay is particularly unsafe during the first half of the north-east monsoon, from November to January, when heavy northerly squalls are frequent. From February to May is considered the finest season. 16

It was reported, in April, 1934, by H.M.S. *Colombo*, that when approaching Tamrida bay (*Lat.* 12° 40' N., *Long.* 54° 00' E.) in the forenoon, also when at anchor in a depth of 7 fathoms (12^m8), the bottom was clearly visible. 20

Town.—Tamrida, known as Bilad-as-Sulyan by the Arabs, the capital of Socotra, is surrounded by a date grove. It consists of a number of white stone houses, surrounding a larger one which is the residence of the Sultan, and contains two mosques and a fort. The population was estimated, in 1937, to be between 800 and 1,000. 25

The best landing place is on the shingle beach close to the western end of the town abreast some date palms. During the north-east monsoon, when the wind is fresh from seaward, the surf on the beach is heavy and renders landing difficult and dangerous. 30

In Tamrida and the neighbourhood the natives are reported to be very friendly.

Tamrida is the most convenient place in the island for a vessel wanting supplies, but at times they are scarce. Water, meat, and fish can usually be procured. 35

Chart 5.

Ras Haulaf to Ras Radressa.—Aspect.—Between Ras Haulaf and Ras Dehammeri, about 6 miles east-south-eastward, the coast forms Bandar Delaisha and Bandar Debeni. 40

From Ras Dehammeri the coast, which is low, trends 4½ miles east-south-eastward to Ras Hammadara, and thence about 8 miles eastward to Ras Deidum; the latter part of the coast is backed by high land, which attains elevations of from 1,000 to 1,200 feet (304^m8 to 365^m8). 45

Between Ras Deidum and a point about 7 miles east-south-eastward is Bandar Faka or Thleife; the shore of this bay is low and sandy, and backed by moderately high mountains. 45

From the eastern entrance point of Bandar Faka the coast trends 1½ miles eastward to the northern extremity of Ras Radressa; the eastern side of this cape is 8 cables long. See view facing page 481. 50

Ras Momi or Ras Mutlāh, the eastern sharp high bluff, or end of the range of mountains extending through the island, is 1,920 feet (585^m2) high; it stands 3½ miles westward of Ras Radressa, and is visible in clear weather from a considerable distance, when the lower

Charts 5, 6a, 1012, 597.

Chart 5.

land near the latter cape is not visible. From Ras Momi the land falls to a moderately high granite mountain, thence to several small granite hills, from 180 to 200 feet (54^m9 to 61^m0) high, and terminates in Ras Radressa.

Coast.—Dangers.—Bandar Delaisha is the western part of a bay, which is entered between a point on which stands the ruins of a mosque or tomb, 2½ miles east-south-eastward of Ras Haulaf, and Ras Dehammeri.

10 Khor Delaisha, 1½ miles south-eastward of the western entrance point of Bandar Delaisha, is apparently inaccessible in the dry season, but a stream, with date trees on its banks, flows into its southern end. A sandhill is reported to stand on the coast about 5 cables eastward of Khor Delaisha.

15 Bandar Debeni, on the western side of Ras Dehammeri (*Lat.* 12° 40' N., *Long.* 54° 09' E.), is free from dangers, with the exception of a rocky spit, with a depth of 2½ fathoms (4^m6) over it, which extends about 2 cables westward of the cape; it is sheltered from easterly winds.

20 Ras Dehammeri is the northern extremity of a narrow peninsula, on which are situated two conspicuous reddish hills, by which it can be identified, the northern one being about 130 feet (39^m6) high; a rock, with a depth of less than 6 feet (1^m8) over it, which is steep-to, lies close northward of this cape.

25 Between Ras Dehammeri and Ras Hammadara the coast, which is mostly fringed by a reef, has a few rocky points, with sandy bays between them.

Bandar Garrieh is a bay on the eastern side of Ras Dehammeri.

Khor Garrieh, a creek, which nearly dries, is situated about midway
30 between Ras Dehammeri and Ras Hammadara; date trees grow on its banks.

Ras Hammadara is low and rocky; a reef, which nearly dries, lies about 2 cables east-north-eastward of this point.

Between Ras Hammadara and Ras Deidum a few rocky points project from the coast, with sand and shingle in the intervening bays;
35 along this part of the coast are some date groves named Tumereh, Kleef, and Thuereh.

Ras Deidum is rocky, about 250 feet (76^m2) high, and appears to be the eastern boundary of the fertile part of the island, for eastward of it
40 hardly a shrub is to be met with, and only a few trees, while westward of it both hills and valleys are covered with luxuriant vegetation.

In the centre of the shore of Bandar Faka stand two double sandhills, with a few trees; there is a village at the eastern end of this bay where sheep, milk, and butter can be procured.

45 A spit, with depths of less than 6 feet (1^m8) over it, extends 4 cables northward of the eastern entrance point of Bandar Faka.

Ras Radressa is comparatively low. A reef, which fringes the eastern side of this cape, extends 3 cables north-north-eastward of its northern point and 2 cables south-eastward of its southern point;
50 there are strong tide rips over the reef extending north-north-eastward from Ras Radressa.

A shoal, with a depth of 5 fathoms (9^m1) over it, lies 4 cables eastward of the southern point of Ras Radressa, and a reef, which dries in places, about 6 cables south-eastward of the same point; a heavy sea generally
55 breaks over this reef.

Charts 6a, 1012, 597.

Chart 5.

Caution.—It is dangerous to attempt to make Ras Radressa during the south-west monsoon, as the lower land eastward of the mountain range is often obscured by haze, and the depths give no indications of approach to it. As, when coming from Minicoy island, passing 40 mile northward of Socotra only adds 8 miles to the length of the passage, no vessel should pass nearer. 5

This caution also applies to the period of the north-east monsoon, when the land has been found obscured about sunset by heavy rain-squalls. 10

Anchorage.—Bandar Delaisha (*Lat. 12° 41' N., Long. 54° 05' E.*) affords good anchorage to vessels with local knowledge everywhere near the shore; it is the most sheltered anchorage off Socotra during the south-west monsoon.

A good berth is in depths of from 7 to 9 fathoms (12^m8 to 16^m5), with the sandhill, mentioned on page 484, bearing 180°, and at a distance of from 3 to 5 cables offshore. 15

Small vessels with local knowledge can obtain anchorage in Bandar Debeni in depths of from 3 to 3½ fathoms (5^m5 to 6^m4), south-westward of the rocky spit described on page 484, with Ras Dehammeri bearing about 067°. 20

There is anchorage for vessels with local knowledge in Bandar Garrieh, in depths of from 6 to 10 fathoms (11^m0 to 18^m3), well-sheltered from the south-west monsoon, from 2½ to 5 cables offshore.

The eastern part of Bandar Faka is sheltered from easterly winds by the spit extending northward of its eastern entrance point, and affords anchorage to small vessels with local knowledge; pilgrim craft anchor here occasionally in April and May, when westerly winds prevail. 25

The best anchorage is in depths of from 9 to 12 fathoms (16^m5 to 21^m9), about 5 cables offshore, with the outer breaker of the reef off the eastern entrance point of the bay bearing 045° and the point about 1½ miles eastward of Ras Deidum bearing 287°. Caution is required when rounding the point of the reef, for unless it is blowing fresh the outer breaker, which has a depth of 5 fathoms (9^m1) close to it, is not always visible. 30 35

SOUTHERN SIDE.—Aspect.—Overfalls.—A table-topped limestone range extends parallel with the southern coast, and generally a short distance inland, almost to the eastern extremity of the island, the different parts, with different names, being nearly separated by a few mountain passes; this range rises like a wall from the plain of Naukad (page 478), which affords pasture. 40

Overfalls occur in places off the southern coast of Socotra.

Coast.—Dangers.—From Ras Shoab the coast trends 9½ miles east-south-eastward to the north-western entrance point of Ghubbat Neh, close northward of which stands a sandhill. 45

A spit, with depths of 2 fathoms (3^m7) over it, extends to a distance of 2 cables offshore from a position about 2½ miles east-south-eastward of Ras Shoab.

A small village is situated on the northern shore of Ghubbet Neh.

Between the south-eastern entrance point of Ghubbet Neh and Ras Kattānahan, about 6 miles south-eastward, the coast, which recedes slightly, is rocky and precipitous. 50

Ras Kattānahan, a vertical bluff, 1,465 feet (446^m5) high, has the

Charts 6a, 1012, 597.

R*

Chart 5.

same appearance from both eastward and westward ; it is the western extremity of Jabal Kuireh. Ras Kattānahan is fringed by a bank, with a least depth of 2 fathoms (3^m7) over it, which extends to a
 5 distance of about 2 cables offshore.

From a position 13½ miles eastward of Ras Kattānahan (*Lat.* 12° 20' N., *Long.* 53° 33' E.) a spit, with a depth of 3 fathoms (5^m5) at its outer edge, extends 5 cables south-eastward from the coast.

About 18 miles east-north-eastward of this position is the village
 10 of Hakari, which is situated about one mile inland ; the village of Deairi lies about 8 miles east-north-eastward of Hakari.

Wadi Fālanj, 5½ miles east-north-eastward of Deairi and 2 cables inland, is situated at the southern entrance to the pass between Jabal Sharbi and Jabal Fālanj ; the coast here is low and sandy, changing
 15 about half a mile eastward to rocky cliffs.

Ras Fālanj, about 6 miles west-south-westward of Ras Radressa, appears from a distance westward as a bluff, but when near it a low point is seen to project south-eastward, with a bay on each side of it ; a reef, partly above water, which is steep-to, extends about 2 cables
 20 south-eastward of this point.

A bluff stands about 2 miles westward of Ras Fālanj, the summit of which is 1,505 feet (458^m7) high, and from it the high land continues north-eastward to Ras Momi.

Bandar Arasal is the bay between Ras Fālanj and Ras Radressa.
 25 **Anchorage.**—There is anchorage anywhere along the southern coast of Socotra, in depths of from 9 to 12 fathoms (16^m5 to 21^m9), sand and coral, about a mile offshore.

Anchorage can be obtained in Ghubbat Neh, off the village on its northern shore, during the north-east monsoon.

30 There is temporary anchorage, in depths of about 9 fathoms (16^m5), in the middle of Bandar Arasal (*Lat.* 12° 33' N., *Long.* 54° 26' E.), and about half a mile offshore, with smooth water during the north-east monsoon.

Charts 6a, 1012, 597.

APPENDIX I

LIST OF PORTS AVAILABLE FOR UNDER-WATER REPAIRS, with details of Largest Dry or Floating Dock or Patent Slip at each Port.

NAME OF PORT AND DOCK	Length from Bilge of Caisson or Mitre Post of gates at		Breadth of Entrance at		Depth at M.L.W.S. level over			Springs rise	FLOATING DOCKS, PATENT SLIPS, &c.			REMARKS (12)
	Coping Head (1)*	Floor Head (2)*	Coping (3)†	MHWS level (4)†	Sill (5)	Blocks at			Maximum Depth over Blocks	Lifting Power (11)		
						Entrance (6)	Head (7)				Forward (9)	
ISMAILIA : Slipway . . .	Feet 262·7	Feet —	Feet 36·0	Feet —	Feet —	Feet —	Feet —	Feet 0	Feet 10·5	Feet 10·5	Tons 1400	Broadside slip- way. There are depths of 17 feet in the channel leading to this dock.
SUEZ : Dry dock . . .	464·8 (484·2 to outer stop).	459·9 (479·3 to outer stop).	89·6	87·0	27 ft. 10 in.	24 ft. 6 in.	20 ft. 4 in.	6·0	—	—	—	
ADEN : Floating Dock . . .	230·0	200·0	53·0	53·0	—	—	—	6·6	11·0	11·0	1200 approx.	
PORT SUDAN : Patent Slip . . .	320·0	150·0	40·5	—	—	—	—	0·5	6·0	14·0	500	
MASSAUA : Slipway . . .	60·0	—	—	—	—	—	—	3·0	—	—	50	

* In the case of floating docks, patent slips, &c., column (1) = extreme length. Column 2 = length on blocks or cradle.

† In the case of floating docks, column (3) = breadth at top. Column (4) = breadth at bottom of dock.

APPENDIX II

LIST OF PRINCIPAL PORTS, SHOWING PARTICULARS OF DEPTHS, &c.

PORT	Depth below Chart datum level		Rise of Tide		REMARKS
	In channel of approach	In anchorage	Spgs.	Nps.	
Suez	37½ ft. 28 ft.	37½ ft. 8 to 30 ft. ..	Feet 6-0	Feet 5-1	Port Tauffiq. Port Ibrâhîm.
Perim	6 to 17 fms. .	4 to 6 fms. ..	6-3	5-1	Depths reported (1930) to have increased by 10 ft.
Aden	6½ to 10 fms. 32 ft.	4 to 6 fms. .. 32 to 34 ft.	6-6	5-2	Outer harbour. Inner harbour.
Port Sudan	Deep	6½ to 14 fms.	0-5	0-5	
Suâkin	8 to 25 fms. .	3 to 8 fms. ..	—	—	
Massaua	Deep	6 to 9 fms. ..	3-0	2-2	
Jidda.....	9 to 11 fms. . 17 to 18 fms.	6 to 19 fms. . 4 to 14 fms.	1-0	0-9	Outer anchorage. Inner anchorage.
Djibouti	7 to 19 fms. .	6½ to 7 fms. .	8-2	6-8	
Berbera.....	Deep	5 to 10 fms. .	7-4	6-0	

APPENDIX III

LIST OF SPOTS SUITABLE FOR MAGNETIC OBSERVATIONS.

Place	Lat. Long.	Position
Port Said	° ' " 31 16 24 N. 32 18 00 E.	<p>On the old sea wall directly in front of the Governorate, at a point about 410 feet from the nearest building, and a little less than 410 feet from the water; marked by a brass bolt about 4½ inches long and 2 inches in diameter at the top, projecting about 0·2 inches above the stone and cement in which it is set.</p> <p>De Lesseps monument (back of head) bearing 270° 34' from true south.</p> <p>Catholic church spire 349° 55' " " "</p> <p>Abyssinian church spire 030° 48' " " "</p> <p>Minaret of mosque 064° 31' " " "</p> <p>Flagstaff on beacon 102° 32' " " "</p> <p>Two secondary stations are situated, the northern station on the beach 193 feet from the main station on a line to the Catholic church, and 48 feet from an iron mark in a block of concrete marked "1,000 km."; the eastern station on the beach 338 feet eastward of the main station on a line to the De Lesseps monument.</p>
Suez	29 58 N. (approx.) 23 33 E.	<p>On embankment road leading south-west from town to Asiatic Petroleum Company; north of road and 116 metres north of small brick house at navigation beacon; marked by brass bolt set in cement in top of sandstone post 20 by 25 by 80 centimetres.</p> <p>Mosque in Arbain bearing 207° 39' from true south.</p> <p>Mosque in Ibrahim Bey Gildan 213° 55' " " "</p> <p>Mosque of Abul-Eef 238° 32' " " "</p> <p>Mosque in Port Taufiq 311° 20' " " "</p> <p>Spire of Catholic Church in Port Taufiq 313° 13' " " "</p>

LIST OF SPOTS SUITABLE FOR MAGNETIC OBSERVATIONS—continued.

Place	Lat. Long.	Position
Aden	12 49 45 N. 44 58 15 E.	On plain about 2½ miles north-north-westward of Prince of Wales Pier and about 110 paces from the low scrub growing on the beach, just beyond high-water mark. Spot is marked by concrete block showing 6 inches above the surface. Radio masts in line bearing 274° 29' from true south. Clock tower 334° 51' " " " Minaret at Sheikh Othmān 210° 40' " " "
Aden	12 47 N. (approx.) 44 59 E.	About 50 metres west-north-west of Victoria Monument; 35·7 metres north of well in front of Hotel de l'Europe and 33·9 and 35·6 metres, respectively, of the west and east ends of the culvert under the roadway; marked by tent peg driven flush with the ground. Centre of ball on clock tower bearing 103° 43' from true south. Flagstaff of Custom house 132° 13' " " " Flagstaff on Flint Island 196° 46' " " " Flagstaff on Shamsban 296° 45' " " "
Massaua	15 36 N. (approx.) 39 27 E.	On south end of Taulud island; on that portion of the island used as a rifle range, between two firing platforms, 44 metres north of the western end of the southern platform; marked by a wooden peg. Cupola of New Hotel near Post Office bearing 198° 03' from true south. Dome of Governor's Palace 199° 06' " " " Mosque in Massaua 224° 11' " " " Massaua lighthouse 232° 48' " " "

LIST OF SPOTS SUITABLE FOR MAGNETIC OBSERVATIONS—*continued*.

Place	Lat. Long.	Position
Jidda	21 28 N. (approx.) 39 11 E.	South-east of Jidda, on the highest part of Jezirat el Mitsaka, a sandy reef just east of anchorage ; marked by a large wooden stake. Mosque in the north-western part of Jidda . . bearing 209° 23' from true south. Tall minaret on a mosque in the western part of Jidda 212° 37' " " " Tall minaret on a mosque at the south-eastern corner of the city wall 228° 32' " " "
Djibouti	11 34 N. (approx.) 43 09 E.	On the waste ground north of Ambouli gardens, 3 kilometres south-south-westward of the town of Djibouti ; 54 metres east of the centre of the road, measured from a point 4 metres north of the 3-kilometre post, and 62 metres east of this post (which is a portion of a steel " I " girder mounted in a square masonry base, on east edge of road about 150 paces north of north-western corner of Ambouli gardens where road turns eastward) ; marked by a block of lava-like stone with oblong base and upper face an acute triangle pointing northward. Top of rear leading light-tower bearing 29° 50' from true south, distant 1 kilometre. Residency flagship 201° 06' " " " 4 Conspicuous minaret in the town " " 210° 26' " " " 3 Southernmost radio mast 218° 13' " " " 2

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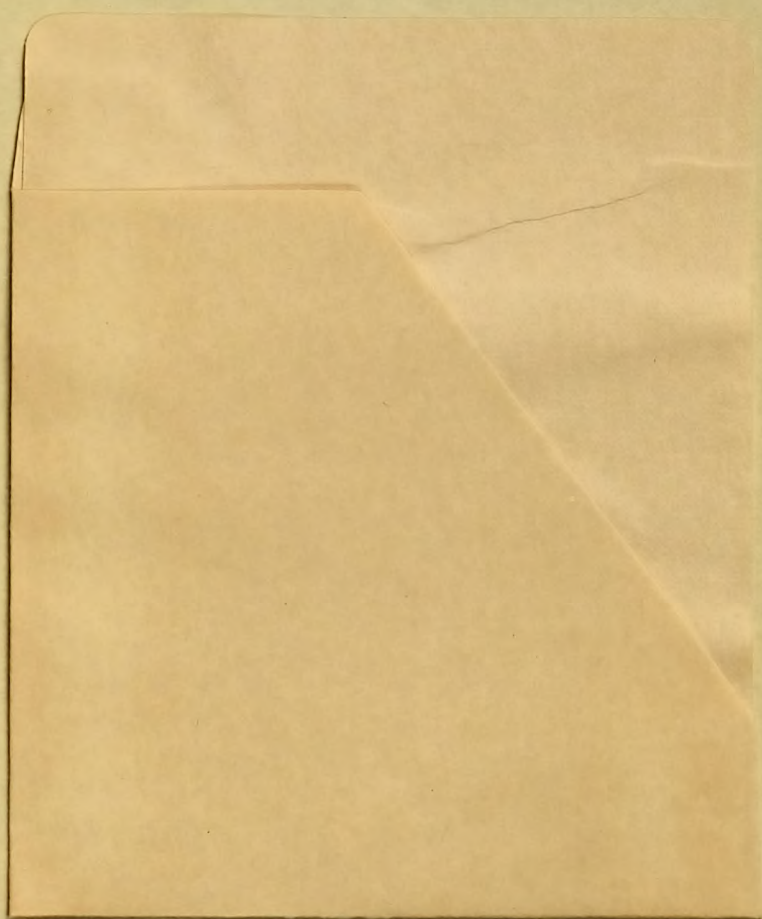
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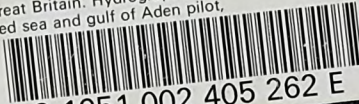
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